An introduction

for to lerne to recken with the pen, or with the counters accordyng to the trewe cast of Algorisme, in hole numbers or in broken, newly corrected. And certayne notable and goodly rules of false positions therevnto added, not before seue in oure Englysshe tonge, by the whych all maner of difficile questions may easely be dissolued and assoyled. Anno. 1546.

To the readet.

That arte and feate (deare reader, whome vtilite and necessite bothe do commende, neadeth greately of no other cõmendation. Howe profitable and necessarye this feat of Algorisme is, to all maner of persons, whiche haue rekenynges or accountes, other to make, or elles to receyue, nedeth no declaration. Neyther is this arte onely necessarye to those, but also in maner to all maner of sciences, and artificyes. For what crafte is that but it somtyme dothe occupye not onely one parte of this feate, but all the partes. And forbycause that dyuers rueles in this booke haue not ben in tymes paste, very cõmodiously expressed, and set forth, and many examples, ino then ne did a greate sorte coheaped together. Therfore paynes haue ben taken bothe in the better and more clearer declaration and expressynge of the sayd rules: and also in the resectynge and cuttynge of dyuers superfluouse & voyde thynges, rather hyn-

derance

derance to the dyligent reader, than for-
therance. Forthermore there is added the
rules of false posytions, the whiche howe
conuenient and profitable they be to the
readye solution of all harde & mysty que-
styons: when ye haue redde theym then
iudge. Nowe thenne ye shall vnderstand
that in this arte there are. vii. necessarye
and distinct partes to be knowen. Nume
ration, Addicion, Subtractiō, Multiply
cation, Partition, Progrestion, and Re-
duction. Of the which. vii. hereafter shall
be syngularly entracted of eche of theym
in theyr chapters. But I aduertyse you
fyrst to begynne at the fyrst parte, & then
successyuely to the seconde, and thyrd. &c.
lernynge euery parte by it selfe exactely,
as they be set forth in this boke: for if
you lepe to the seconde part, before
you haue perfectly the fyrst, or to
the thyrde, before you haue
sene the second, you shal ne-
uer prosper ne profette
in this arte. Uale.
Finis.

¶ The fyrste parte is of Numeration.

Umeration is a maner of expressynge of numbers by certayn figures which are called figurs of Algorisme, the which be tenne, as in this example.

i. ii. iii. iiii. v. vi. vii. viii. ix.

1 2 3 4 5 6 7 8 9 0

Of the which nyne be significatyue, the tenth called a sipher, sygnifieng nothyng of it selfe, but only set before the other significatyue fygurs augmentyth theyr signification. In numeration by this crafte ye must euermore begynne at the ryghte syde of the boke, and so towardes the lyft syde, as in this example.

k i h g f e d c b a

3 2 0 4 6 7 5 2 8 9

This fygure 9 vnder a, standeth in the fyrste place. 8 vnder b, standeth in the seconde place, and so forthe to the ende, so

that

that ; vnder k, standeth in the laste place. By these tenne figures all maner of number possyble to be excogitate, may clearely and playnely be expressed : whiche all be it, that of them selfe they sygnifie but symple and lyttell number, as ye se afore, yet according to the diuersite of the place they stande in, dyuersly doth theyr signification amount. wherfore in numeratiō ye muste note twoo thynges, the sygure significatiue, and the place it standeth in for the signification of the sygure dependeth vpō the number of the place it standeth in: For example, this sygure 8 standynge alone, or in the fyrste place signifyeth but. viii. but yf he stande in the seconde place, as here 80 he signifyeth. viii. tymes tenne, whiche is called. iiii. score. yf he stand in the thyrde place, as here 800 he signifyeth. viii. hundreth. &c. Therfore ye must know perfectely the signifycatiō of euery place, before ye can perfectely nūber. wherfore vnderstand ye, that the fyrst place is a place of vnitees, so that a figure standynge in it, signifieth no more then

though he stand alone. The second place is a place of tennes. The thyrd is a place of hūdrydes. The fourth place is a place of thousandes. The fifth place, a place of tenne thousandes. The. vi. place a place of hundreth thousandes. The. vii. place, is of thousand thousandes, which is called a myllion. The. viii. place, is of tenne myllions. The. ix. is a place of hundreth myllyons. The. x. of thousand myllions. The. xi. of ten thousande myllions. The xii. of a hundreth thousande myllions. The. xiii. of a thousand thousand myllio, whiche is called myllyon vpon myllyon. And so forth infinitely, euery place euseuenge, signifieth. x. tymes as moch as the place goynge before. This muste thou knowe perfitely what euery place gyueth and signifyeth: for the place gyueth denomination, and the figure standyng in the same place expresseth how many of the same denomination is to be vnderstand: as in example ye shal more playnly perceyue

In this summe 34008726l9 this figure 2 standyth in the. iiii. place, nowe by your rule

rule afore, the. iiii. place is a place of thou
sandes, then this fygure 2 standynge in
the same place gyueth vs to wytte, that it
is two thousande, Lykewyse this fygure
3 standeth in the. vi. place, nowe by your
rule afore spoken of, the. vi. place is of
hunderth thousandes: then this figure 8
situat in the same place receyueth denomi
natiõ of the place, and representeth to vs
viii. hundreth thousandes. Lyke wyse
this fygure 1 standeth in the secoud place
and forbycause the secoud place is a place
of tennes, therfore this figure 1 standyng
there is bounde to the signification of the
place, and so signifyeth one tenne: yf a fy=
gure of 4 stode there, it shuld signify. iiii.
tennes, that is fourty, and so forth. Then
for a farther declaracyon of the forsaide
su:mme, and all other lyke summes. This
figure 9 standynge in the fyrste place, sig=
nifyeth but hym selfe, that is. ix. This fy=
gure 1 standynge in the seconde place, by
cause the seconde place is euer a place of
tennes, sygnyfyeth one tenne. The fy=
gure 6, standynge in the thyrde place,

bycause the thyrde place is a place of hun
drethe, doth signifye. vi. hundreth: the fy=
gure 2 in the fourth place, signifieth. ii.
thousande: the figure 7 forbycause it stan
dethe in the fyfte place, and that place is
a place of tenne thousandes, it signifieth
vii. tymes tenne thousande, the which is
iii. score thousande and ten: the figure 8
in the. vi. place signifieth. viii. hundreth
thousand: the sypher 0 that standeth in ỹ
vii. place signifieth nothynge, but onely
maketh vp a place that the fygures signi
ficatyue folowynge maye encrease there
signification. Lyke iudgement is of the
sypher standynge in the. viii. place: in the
ix. place standeth the figure of 4, and this
place is a place of hundreth myllyons:
therfore this fygure 4 there signifiethe
iiii, C. myllions. In the. x. place standeth
the fygure 3, and this place is a place of
thousande myllions: therfore it signify=
eth. iii. thousande myllions. So the hole
summe is, thre thousand mylions. iiii. C.
milliõs. viii. C. thousand, thre score thou
sandes. xii. thousand. vi. hũdreth, and. xix.

Nowe

Now to exercyse your selfe in numeratiō numbre with your selfe these summes folowynge, & you shalbe perfecte ynough. Millió. Mil. Mil. Mil.

x.	M.	C.	x.	M.	C.	x.	one
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9

Furthermoze thou muste note that there be in algoziſme thze maner of numbzes, Diget number, Article, and Compoſte.

The digette number, is all maner of numbzes, whiche are vnder. x. as theſe.

9 8 7 6 5 4 3 2 1.

The article number is, all numbers whiche are of. x. as theſe.

10 20 30 40 50 60 70 80 90.

The compounde number is all maner of numbzes which are compoūd oz made

of the dyget & article togyther, as folow.

11	12	13	14	15	16	17	18	19
21	22	23	24	25	26	27	28	29
31	32	33	34	35	36	37	38	39

And so forth of al other. This is sufficiēt for the knowlege of nūbre in Algorisme.

¶ The seconde parte called Addition.

Addition is a collectiō of diuers and sundrye sūmes, into one totall summe, whiche contaynyth as much in hym as al the other sūmes, beynge before sundry. In addition are two nombres to be consyderyd, the one is, the nūbres which muste be adioyned togyther: the other is the nūbers which redoundeth of theyr addition together, whiche otherwyse is called the totall summe. Then when ye wyll adde many summes togyther, fyrst write them fayre the one directely vnder the other, so that the fyrst figure of the one, be ryght vnder the fyrst of the other, & the seconde

vnder

vnder the seconde: euery place correspon-
dent vnder other: that done drawe a lyne
vnder al these seueral summes, as is to se
in ỹ exãple folowyng. And whan ye wyll
adde your nũbers togyther, begyn at the
fyrst places of your sũmes & adde all the
figures that ye se in the fyrst places of all
your sũmes togither, and ỹ that cõmeth
of that addition, se whether it be digette
number, article, or cõposit: yf it be but dy-
get, set ỹ dyget benethe the lyne, directely
vnder the same first places: yf it be article
put a cypher beneth the lyne, right vnder
the same fyrst place, & reserue ỹ article to
be added to the nexte places of thy sũmes
& there do likewyse, yf it be cõposit, set the
dyget vnder the lyne right vnder ỹ same
place, & reserue the article in your mynde
lykewise to be added to the nexte places
of thy sũmes: when the figures standyng
in the last places of your summes be ad-
ioyned togyther, yf any article or arti-
cles remayne, set them downe nexte to the
fygure ye sette last before vnder the same
lyne: as by examples shall appere.

The

The fyrste summe.	6	7	8	9	4
The seconde summe	3	4	5	6	7
The thyrde summe	2	3	4	5	6
The fourth summe	7	8	9	3	4
The fyfth summe	6	7	4	2	5
The syxthe summe	3	4	3	2	2
Summa totalis	3	0	6	5	9	8

Your fygures set after this sorte, adde all the fygures that ye fynde in the fyrste places of all the summes together, begynnynge at the nethermost sayenge, 2 & 5 is 7, and 4 that is 11, and 6 that is 17, and 7 that is 24, ans 4 that ts 28. This is the hole summe of the figurs added togyther founde in the fyrst places, the whiche nūber is composte: wherfore, as is in your rule, ye must set the dyget ryghte vnder the same place, benethe the lyne, the whiche is 8, & kepe the articles in your mynd, which is 2. Now to the seconde place, towarde the lyfte hande, say, 2 that I haue in mynde and 2 is 4, and 2 maketh 6, and 3 is 9, and 5 is 14, and 6 is 20, and 9 is 29, now set the 9 vnder 2, & kepe 2 in mynde, and adde them to the fyrste fygure of the thyrde

thyrde place, that is 3. Now say 2 and 3 is 5, and 4 is 9, and 9 is 18, and 4 is 22, and 5 is 27, and 8 is 35. Now set 5 vnder 3, and kepe 3 in mynde. Now to the fourthe place, towarde the lyfte hande where 4 standeth, now 3 that ye haue in mynde and 4 is 7, & 7 is 14, and 8 is 22, and 3 is 25, & 4 is 29, and 7 is 36, set 6 vnder 4, and kepe 3, and adde that 3 to the vndermoſt fygure of the fyrſt ſumme that is 3, and ſay 3 and 3 is 6, and 6 is 12, and 7 is 19, and 2 is 21, and 3 is 24, and 6 is 30. All the figures of this place added togyther as ye ſe, maketh article number wherfore accordyng to your rule ſet a cyfer. 0 vnder that place benethe the lyne, & the artycle whiche is 1 nexte to the ſame cyfer, & al is finiſhed. And all theſe ſūmes thus collected togither maketh 306598.

An other example of addition.

1	0	0	6	6	7	8	4	5
6	0	0	0	3	1	9	5	0
5	0	0	5	4	5	1	6	1
			8	0	1	2	0	2
					6	4	2	1
1	2	0	2	0	5	2	5	9

Begyn

Begyn fyrst as ye dyd before, at the fyrst places, addyng them all togyther, begyn nynge at the nethermost, sayenge, 1 and 2 is 3, and 1 is 4, and 5 is 9, this is the hole summe of the fygures standynge in the fyrst place, the whiche is diget number, and therfore accordynge to the rule, set it ryghte vnder the same place benethe the lyne: then procede to the second place and begyn at the nether ende sayenge, 2 and 6 is 8, and 5 is 13, and 4 is 17, the se number is compost nūber, therfore set ỹ diget righte vnder that place beneth the lyne, which is 7, reseruynge the artycle in your mynde, and so to the thyrde place, sayeng, 1 that I haue in my mynde and 4 that is 5, & 2 is 7, and 1 is 8, and 9 is 17, and 8 is 25, this num ber also is cōposte, wherfore set the diget 5 vnder that thyrde plāce, & reserue the arti cle 2 in mynde to the nexte place, then to ỹ next places sayeng, 2 ỹ I haue in mynde & 6 is 8, & 1 is 9, & 5 is 14, & 1 is 15, & 7 is 22, this is also cōposte, therfore set ỹ diget 2 vnder that .viii. place, & reserue the article 2 to ỹ next places, then to the fifth place sayeng

2 that

2 that I haue in mynde & 4 is 6, & 3 is 9, & 6 is 15, this is also compost nūber, set the diget 5 vnder ẏ fyfth place, and kepe ẏ article in mynde, to the. vi. place sayeng, 1 ẏ I haue in mynde & 8 is 9 & 5 is 14, and 6 is 20 this is article nūber, therfore accordynge to the rule set a syfer vnder the place benethe the lyne, & kepe the article in mynde and cum to the. vii. place, in ẏ whiche places for bycause thou fyndest nothyng but cyphers to the whith ẏ myghtes adioyne thy article reserued, the which was 2, therfore vnder ẏ same. vii. place set that same reserued 2, and then com to the. viii. place and there fyndest ẏ nothyng but cyphers wherfore vnder the same place set beneth the lyne a cypher, accordyng to the rule, then come to the. ix. places & say. 5 and 6 is 11, & 1 is 12, the which is cōpost nūber, therfore set ẏ diget which is 2 vnder the line & reserue ẏ article in mynd, which is 15 now for bycause there is no mo places wher- vnto ye myght adde this reserued article therfore according to your rule ye shal set it downe next vnto the figure that ye dyd

sette

set vnder the lyne laste, as is in your example. This .ii. examples were sufficient ynough to the redyneſſe of addition, how be it yet that it may be the playner I wyl subſcribe an other example.

2	4	6	9	9	0	0	0	
3	8	2	9	0	2	0	0	
0	1	0	9	1	6	0	0	
	1	0	2	0	0	0	0	
5	5	1	0	0	8	0	0	

Adde the fyrſt place to gyther. Fyrſte there thou fyndeſt nothyng but cyfers, wherfore ſette a cyfer vnder the lyne, and ſo lykewyſe in the ſeconde place. In the thyrde place thou fyndeſt 6 and 2 whiche maketh 8, the whiche for bycauſe it is dygette number, ſet it vnder that place benethe the lyne. In the .iiii. place is 1 and 9 which maketh 10, and forbycauſe that this is article nũber, ſet a cyfer vnder that place benethe the line, and reſerue the article to the next place ſayenge, 1 that I haue in my mynde and 2 is 3, and 9 is 12, and 9 is 21, and 9 is 30 this is alſo article number, wherfore ſet a cyfer vnder that place beneth the lyne, and reſerue the article 3 in mynde to the

nexte

nexte place. Then come to the. vi. place: sayenge, 3 that I haue in my mynde and 2 is 5, and 6 is 11, this is composte numbre therfore I set the dyget which is 1 ryght vnder that place beneathe the lyne, and reserue the article 1 to the nexte place, sayenge 1 and 1 is 2, and 1 is 3, and 8 is 11, & 4 is 15, this is also composte, therfore sette the dyget 5 vnder the lyne, and adde the article reserued to the figure in the nexte place sayenge, 1 and 3 is 4, and 1 is 5, this is dyget numbre, therfore sette it vnder the lyne, and all is done.

¶ Certayne examples to practyse youre selfe in, touchynge the exercyse of Addition.

16768900	10000000
36219880	13456289
92000032	82020101
11116841	10000000
19421326	38921000
175526979	91397390

9090201000	640000
2651260000	860000
25432071	998000
21654000	780000
962001	590000
1000	100003
11789510072	3968003

900026	3000268
205812	1060986
901000	1000939
909619	1000939
100000	2000917
3016457	1064669

¶ Of the proue of Addition.

¶ For the proue of additiō, ye shal make a crosse after the fashyon that foloweth. And then ye shall come fyrst to the addible summes, and plucke out all the 9 that ye fynde there, and the reste what so euer it be, ye wyll not make 9 set it at the vpper syde of the crosse. Then come to the totall sum

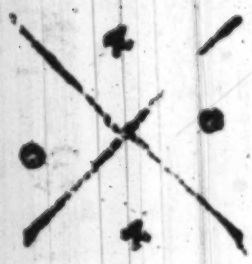
ſumme vnder the lyne, and lykewyſe de duck all the 9 that ye can fynde there and that that remayneth, not able to make 9 ſet it at the vndermoſt parte of the croſſe, and yf it be lyke the remenant of the addyble numbres which ſtandith in the vpper parte of the croſſe, your worke was good, yf not it was naught, as by example ye ſhall the better perceyue.

¶ An example of the proue.

A	2	5	0	6	7	0
B	3	3	0	4	2	8
C	5	8	1	0	9	8

¶ Nowe for to make the proue of this numbres, ye ſhall begynne at the fyrſt fygure that ye haue made, in ſayenge, 8 and 0 is 8 and 2 is 10, take awaye 9 then there reſteth 1, than 1 and 7 is 8, and 4 is 12, take awaye 9 reſte 3, than 3 and 6 is 9, than to the two cyphers of nothynge that nothynge do ſygnifie, thanne 3 and 5 is 8 and 3 is 11, take awaye 9 reſte 2, thanne

2 and 2 is 4, this 4 it behoueth you to put at the nether ende of the crosse, than come to the place of C. vnder the lyne and say 8, ye shall leue the 9 and the cypher o that is nothynge worthe, and adioyne 1 therto and make it 9, and leue that, thanne 8 and 5 is 13, take awaye 9 reste 4, whiche 4 ye shal put at ỹ vpper ende of the crosse and than is your proue good, for bothe the endes be lyke as ye se in this fygure of ỹ crosse. And at the two other endes ye shall put two o o in certifyeng that of them cometh nothynge.



¶ An other example.

A	7	8	9	1	5	4	3	2	6	li.
B	4	9	3	0	0	6	7	1	5	li.
C	2	0	9	9	3	4	7	8	4	li.
D	4	6	0	6	4	5	5	3	0	li.
E	9	3	6	4	5	8	7	7	8	li.
F	4	4	5	1	9	3	0	0	1	li.
G	33	3	4	3	9	3	2	3	4	li.

¶ we shall saye semblably 1 and 8 is 9 and alwayes leue them, than 0 that dothe nothynge, than 4 and 5 ben 9, than 6, then we shall retourne to the tenthes, and shal fynde 0 that doth nothynge, than 7 that mak: th 9 reste 4, than 3 ben 7, than 8 ben 9 reste 6, then 1 is 7, then 2 is 9, then 0 that is nothynge woꝛth, then 7 and 5 is 9 reste; then 7 is 9 reste 1, then 7 is 8 and 3 is 9 reste 2. Thanne we come to the place of hundꝛethes, & adioyne the 2 to the 3 that is 5 than 8 is 9 rest 4, and so consequently vnto the ende. And yf peraduenture we find this fygure 9 bycause of the bꝛefnes, we shall leue it. And shall fynde at the ende 9, therfoꝛe we shall put at the ende of the crosse 0 in sygnifienge that there is nothynge aboue 9. And so shall we do in the number of G. and we shall fynde lyke 9 foꝛ the whiche semblably we shall put 0. And so is the addition good & well made.

¶ The pꝛoue

As touchynge of additiō in broken numbers, ye shall fynde that vnder the tytle of Reduction hereafter.

¶ Of Subtraction, the thyrde parte.

Subtractiō is a maner of debatyng or subducyng a lesse summe out of a greater: or lyke of lyke shewyng what remayneth.

In subtraction are two numbers, the fyrste is the number abatyd, the seconde, the number abatynge.

¶ Then when ye wyll subtrahe any one number out of an other. Fyrste ye shall wryte the number to be abatyd, and vnder it directely fygure vnder fygure, and place vnder place wrytte the abatoure, and benethe these two summes drawe a lyne, then begyn your subtraction at the fyrste places, and subduce the figure standynge in the fyrst place of the abatour of the fyrste figure standynge in the fyrste place of the nomber to be abatyd: and the

reſt that remayneth after the abatemen.
ſet it ryght vnder the ſame place benethe
the lyne: and ſo do lyke wyſe in the ſecond
the thyrd, and al other places. And when
ye haue all done, the number that ſhal re=
mayne vnder the lyne, ſhall be that, that
remayneth after the ſubduction of the a=
batour of the number abatyd. As for ex=
ample.

Lent	83456
Payd	41131
Reſte	42325

¶ I lent a man 83456 li. of the which he hath payed me 41131 li. a=gayne now I deſyre to know how mych remayneth. Then accor dynge to the rule, fyrſte I ſette the lente money, and ryght vnder that I ſette the repayed monie, figure vnder figure, and place vnder place: as ye ſe by the example Under bothe theſe ſommes I muſt drawe a lyne. Begyn to ſubtrahe the vnder ſum out of the vpper, ſayenge, 1 out of 6 re=mayneth 5, this 5 that remayneth accor=dynge to the rule ſet vnder the ſame place beneth the lyne: then to the ſeconde place

plucke 3 out of 5 remayneth 2, set that vn-
der the lyne: then to ỹ thyrd place, plucke
1 out of 4 remayneth 3, set that vnder the
lyne: then to the fourth place, take 1 oute
of 3 remayneth 2, sette it vnder the lyue:
then in the fyfth place, take 4 out of 8 re-
mayneth 4, set that also vnder the lyne, &
so thou hast fynyshed: Then thou shalte
vnderstande ỹ it which is vnder the lyne
is the remanẽt of the monie not yet paid.

¶ An other example.

8 7 6 0 li.
6 7 5 6 0 li.
2 0 1 0 0 li.

¶ Begyn at the fyrst place
sayenge, 0 out of 0 remay-
neth nothynge, sette the fy-
gure of nothyng vnder the
lyne: then to the seconde place 6 out of 6,
remayneth nothynge, sette the cypher vn-
der the lyne: then to the thyrde place 5 out
of 6 remayneth 1, set 1 vnder the lyne: then
to the .iiii. place 7 out of 7 remayneth no-
thynge, set the figure of nothynge vnder
the lyne, then to the fyfte place, take 6 out
of 8 remayneth 2, set that vnder the lyne,
and thus thou hast done. Then 2 0 1 0 0 re-
mayneth

mayneth yet to be payde.

¶ Nowe thou shalt noote, that somtyme it chaunseth that the fygure standyng be nethe is greatter thenne the fygure standynge aboue hym in the sum from whom subduction is made. In this case thou shalte in thy mynde put tenne, to the fygure in the vpper summe, and then subtrahe the nether fygure oute of the same, sette the remanaunt vnder the lyne, and for the same tenne the which thou dyddest put to ỹ vpper fygure to make hym gretter, thou shalte adde one to the nexte fygure standynge in the nether summe, and then subtrahe that lykewyse out of the figure aboue hym, yf the fygure aboue be bygger then the figure benethe with his addition other elles equall, and that remayneth set it vnder the lyne, as ye dyd in the other example. If the figure aboue be lesse then the figure benethe, thendo to hym as ye dydde to the other before: that is to saye adde tenne to hym: and so forth in all other places. ¶ Here the nether fygure of the abatour is greatter thenne

the vpper figure frome whence it sholde be abatyd: as by this example ye shall moze clerely perceyue.

¶ An example.

5 7 2 9 5 4 9 0
4 8 7 6 5 2 9 7
8 5 3 0 1 9 3

¶ Begyn your subtraction sayenge, 7 out of 0 that can not be, therfoze forbycause that 7 standynge in the nether summe is moze than the fygure standynge in the fyrst place of the vpper summe, ye muste adde a tenne, then deduc your 7 out of 10 and there remayneth 3, then come to the seconde place and foz the ten that ye borowed in youre mynde and a[illegible]yd it ỹ fygure in the fyrst place to make it bygge ynough foz the figure vnder it to be subduced oute of it, foz the same tenne I say ye shall put to ỹ next fygure in the nether place of the nether summe 1, then saye 9 and 1 is 10, then subduce this 10 out of the figure of 9 standynge aboue it in the vppar summe and that ye can not, therfoze do as ye dyd befoze in the fyrste place, putte 10 to the 9 in your

your mynde ſayenge 10 and 9 is 19, thenne deduck the 10 beneth out of the 19 aboue, & there remayneth 9 to be ſet vnder the lyne: then to the fygure ſtandynge in the thyrde place in the nether ſumme, putte 1 for the ten that ye borowed in your mynd the whiche ye addyd to 9 in the ſeconde place of the vpper ſūme to make it greater: ſayenge 1 and 2 is 3, ſubtrahe that 3 out of 4 aboue it, remayneth 1 to be ſette vnder the lyne. Then to the fourth place, take 5 out of 5, remayneth nothynge, ſet a fygure of nothynge vnder the lyne, and come to the .v. place, take 6 out of 9 remayneth 3 to be ſet vnder the line, ſo to the .vi. place, take 7 out of 2 that can not be, therfore put to the ſame 2 accordynge to thy rule 10, and thē it is 12, then ſubduce 7 out of 12 remayneth 5 to be ſet vnder the lyne: and for the ſame 10 that thou borowdeſte in thy mynde to put to the fygure of 2 in the vpper ſumme, thou ſhalt adde 1 to the fygure ſtandyng in ỹ nexte farther place in the nether ſum, cōming to ỹ ſame place

whiche

whiche is the seuenth place sayeng 8 and
1 the whiche I haue too sette to hym is 9,
then 9 out of 7 that I can not, wherfore
lykewyse agayne I must helpe the same
7 with a tenne and then it is 17 out of that
now subtrahe your 9 and remayneth 8 to
be sette vnder the lyne: nowe as ye haue
done before in all other places for the 10
here borowed & adioyned, then adde 1 to
the nexte figure standynge in the seuenth
place of the nether number sayeng, 4 & 1
is 5, then subduce this 5 out of the 5 aboue
and remayneth nothynge, wherfore sette
a fygure of nothynge benethe the lyne, &
so ye haue done.

¶ How be it ye shall noote that when ye
haue a cypher to be wrytten in the laste
place of any summe, ye shall not wryte it,
for in the last place it signifyeth nothyng
of it selfe, neyther dothe it augmente the
signification of any of the other.

¶ Yet one other example wyl we set and
then make an ende of Subtraction.

1 0 0 0 0 8 1 0 0 7 1 0 0
4 8 4 0 5 7 4 8 0 0 8 7

5 1 6 0 2 3 5 2 7 0 1 3

Ye shal begynne sayenge, 7 out of 0 that can not be, for ye canne not take 7 out of nothing, wherfore as ye haue done alwayes in the example afore, put temme to that cypher, and that maketh 10, then deduc your 7 out of it nowe, and remayneth 3 to be sette vnder the lyne: then for this ten that ye adde to the fygure in the fyrst place of your vpper number, set 1 to the fygure standynge in the seconde and nexte place of the nether number sayenge 8 and 1 is 9, then 9 out of the cypher aboue that can not be, therfore as ye dyd before make that 0, 10, and then subduce youre 9 out of this added 10 remayneth 1 to be set benethe the lyne: then for this 10 lyke wyse, that ye borowed in the second place of your vpper number, ye shall sette one to the next fygure standynge in the thyrd and nexte place of the nether summe, sayenge, 1 and the 0 is one, thenne take that 1 out of 1 aboue hym, remayneth nothyng, set a fygure of nothynge benethe the lyne

then

then to the.iiii.place take ỹ syfer o out of 7 aboue remayneth 7 stylle:to be sette vnder the lyne. So to the.v.place take 8 out of o that ye can not, therfore put 10 to the sypher and then subduce it, and remayneth 2 sette that vnder the lyne: for this tenne adde 1 to the nexte figure in the. vi. place, whiche is 4, then 4 and 1 is 5, and 5 out of o that ye can not, then make o 10 & take the 5 out of it remayneth 5 to be sette vnder: then for the borowed ten, lykewise sette to the next fygure in the.vii.place of the nether nomber 1, sayeng, 1 and 7 make 8, & 8 out of 1 ỹ can not be, therfore put ten to that 1 and then 10 and 1 is 11 out of this 11 deduce your 8 remayneth 3 to be set vnder the lyne: then for this 10 to the nexte fygure in the. viii. of the nether som set 1 sayeng, 5 and 1 is 6 thē 6 out of 8 remaineth 2, then to the. ix. place, take o out of o remayneth also o, set that vnder the lyne, in the. x. place take 4 out of o that can not be therfore put 10 to that o and subduce your 4, remayneth 6, then to the fygure in the nexte place whiche is the. xi. put 1 saieng

8 and

8 and 1 is 9, then 9 out of 0, that can not be, therfore put ten to it, and then subtrahe your 9 out of 10 remayneth 1, sette it vnder the lyne: for this borowed tenne put one agayne to the nexte fygure which is 4, sayenge 4 and 1 is 5, 5 out of 0, that can not be, therfore lykewyse agayne make it 10, and then take 5 out of it, remayneth 5, then agayne for your borowed 10 put 1 to the nexte place: but for bycause there be no mo places and therfore subtrahe it alone out of the figure aboue, sayenge, 1 out of 1 remayneth nothynge, therfore no thynge is to be set vnder the lyne, not so moche as a 0, forbycause it is in the laste place. So then the summe vnder the lyne is the remayne that remayneth after the subtractiō of the lower summe out of the vpper summe.

Here after foloweth the proue of Subtraction.

The

¶ The proue of Subtraction.

The proue whether ye haue subtrahed well or no, ye muste adde the remayne to the nombre payde, and yf they twayne added together do make the fyrste summe lent completely then is it well subtrahyd, yf not, it is not well subtrahyd, as by the laste example ye maye well perceyue: for by the rule of addition, adde 3 to 7 ther of commeth 10, set the sypher vnder the lyne and reserue the article to the next place forth accordynge to the rule of Addition, and thou shalte se this twoo summes added togyther to come to the fyrste lente summe: and this of Subtraction shalbe sufficient.

¶ Of Multiplication.

Multiplicatiō is a maner of encreasing or augmēting one sum by another In this feat of multiplicatiō are .iii. nūbres to be noted the multiplyed nōber, the multiplyer, & the numbre that redowndeth of the multiplicatiō of ỳ multiplied

typlyed nomber by the multypliar, as in example. Multiply this number 4 by 3 & therof come 12, 4 is the nũber multiplied: 3 is the number multiplyer, 12 the thyrde nuinber that redounded of the multiplycatiõ of one of these nuinber by the other then for more experience and redy workynge in this kynde of operation ye shal perfectely knowe by memory the multiplication of one dyget by an other, the whiche ye shall haue here in this table folowynge, of the whiche one dygette ye shall loke for in the hed of the table, and the other in the lefte syde of the table.

¶ Here after foloweth the Table.

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

¶ By this table ye shal sufficiently lerne to multyply one dygette by an other. As for example, yf ye wyll multiplye 9 by 5, loke for the 9, at the heed of the table, and for 5 the multiplyer at the lefte syde of the table, then with thy fynger descende downe from the place where 9 standeth tyll thou

comme

come before the place where the 5 stādeth and there in the same angle, thou shalte fynde 45, and that cometh of 5 tymes 9, & so do lyke wyse of other.

¶ There is also a proper rule for ỹ multiplication of one dygette by an other, & it is this, when thou wylte multyply one dyget by an other noote the distaunce of the greater diget from 10 and by the same distaunce multiplye the lesse dyget or equall, & that that procedeth of it deducte out of that article whom the lesse number doth denominate, and ỹ reste is it that ye seake for, as for example: yᵉ ye wyll multyply 7 by 5, fyrste se the distaunce betwene 7 which is the greater numbers and 5, and that is 3, by this 3 multiply 5, and that is 15 then subduce this 15 out of ỹ article that 5 the lesse number doth denominate, whiche is 50. then remayneth 35, that is 5 tymes 7: so lykewyse shall ye doo yᵉ the multyplyar and the multiplyed by lyke. Now be it moost ready it is to knowe [illegible] boke very perfytely the multyplication of euery dyget one in an other.

Now when ye wyll multyply any one number the one by the other. Fyrst wryte fayre your number to be multyplyed, and vnder it the multiplicatour, beneth both these summes, ye shal drawe a lyne. Then shal ye consyder whether your multiplier be a dyget or articly, other elles compost number. If it be dyget number ye shall begynne to multyply by the dyget the fygure or dygette standynge in the fyrst place of the number to be multiplied, and that that commeth of it, if it be but a dygette, set it vnde the lyne ryght vnder the same place, and thē procede forther to the nexte place and multiply the figure standynge in that place by the same multiplier, and that that redowndeth of it, yf it be a dygette sette it lykewyse vnder the lyne ryghte vnder the same place, and soo do lykewyse in euery place folowynge, vnto suche tyme as all the figures standynge in euery place, be multyplyed: then that the whiche shalbe founde vnder the lyne is the summe commyng of the multiplication of this two nūbers, the one by the

other

other: as by example ye shall the better perceyue

2	3	1	4
			2
4	6	2	8

¶ If ye wyll multyplye this sum 2 3 1 4 by this 2, ye shall sette your figurs after this sorte, as ye se them. Begyn youre multiplication sayenge 2 tymes 4 is 8, sette that 8 vnder the lyne, then come to the next place and say, 2 tymes 1 is 2, sette it vnder the lyne, then to the thyrde place, 2 tymes 3 is 6, set that vnder the lyne, so to the fourth place, 2 tymes 2 is 4, set that vnder the lyne also, & then thou hast done: so that this number 4 2 8 vnder the lyne, is it that commeth of the multiplication of this summe 2 3 1 4 by this number 2. But yf it be so that in the multiplication of any fygure in the number multyplicable, by the multiplyer that it which redoundyth of it be article number, then ye shall set a cypher beneth the lyne ryght vnder ẏ same place where the multiplycation is, and reserue the artycle to be addyd to the number that pro-

cedeth of the multiplication of the figure in the nexte place by the afore sayd multiplyar, the whiche lykewise yf it amounte to an article do likewyse as I byd you to do in the fyrste place: but yf it be number composite, then shall ye set the dyget vnder the same place beneth the line, and reserue the article to be addyd lykewyse as is before sayde of article nober, as in this exampie.

8 1 4 1 6 4 2

5

4 0 7 0 8 2 1 0

¶ yf ye wyll multyply this nober 8141642 by this fygure 5. Begyn at the fyrst place sayenge 5 tymes 2 is 10, nowe forbycause that this number is article, ye shal accordynge to the rule before, sette the cypher vnder the lyne, and reserue the article 1 to be added to the nomber that precedeth of the multyplycation of the nexte fygure standynge in the next place of the summe multiplycable, by the multiplyer: so then come to the nexte place sayeng, 5 tymes 4 is 20, to this 20 adde 1 for ỹ article that ye reserued, and that maketh 21, therfore bycause

cause that this is a composte nũber ther
fore sette the digette vnder the lyne be=
nethe the same place, and reserue the artt
cle to the nexte place: then come to the. tii.
place sayenge, 5 tymes 6 is 30, to this adde
the article 2 which ye reserued in the place
next goinge before, and then it is 32 sette
the dygette vnder the lyne as ye dyd be=
fore reseruing the article to the next place
then come to the. tiii. place saieng, 5 times
1 is 5 to this adde the article reseruyd, whi
che is 3 and that maketh 8, set this digette
nõber vnder the line, and thencome to the
v. place sayenge, 5 tymes 4 is 20, nowe for
bycause that this nomber is article set 0
vnder that place beneth the lyne reser=
uynge the article 2 to be addyd vnto the
next place: then comme to the. vi. place
sayenge, 5 tymes 1 is 5, to this adde the ar=
ticle 2 reserued and then it is 7, set it vn=
der the lyne: thẽ to the. vii. place, sayenge,
5 tymes 1 is 40, now forbycause it is an ar=
ticle nomber ye shall sette a sypher vn=
der the lyne, and reserue the article 4
too the nexte place, and for as moche

as there is no mo places, ye shall set this 4 vnder the lyne nexte vnto the o that ye sette downe laste, and then ye haue done.

¶ When that your multiplyer is composte or article, then shall ye take the fyrst fygure of your multyplyer, and by hym shall ye multiplye all the fygures of the multiplycable numbers, settyng alwaye that that amounted of it benethe the lyne as ye dyd before. And when ye haue multiplyed the number multiplycable by the fyrst fygure of the multyplyar: then multiplye it agayne by the seconde figure of the multiplyer, settyng euermore the fyrst fygure of the number multiplycate, dyrectely vnder the figure multiplycatour, in what place so euer it stande; and the number multiplycable is multiplyed by al the figures of the multiplicatour, then make a stryke vnder them all, addyng al the numbers multyplycate together as they stande, and that which procedeth of that addition is the number multiplycable nowe multyplyed by the hoole nūber multyplycatour, as by this example ye

shall

shall playnly perceyue.

	2	3	4	5
	1	2	3	4
	9	3	8	0
7	0	3	5	
4	6	9	0	
3	4	5		
2	8	9	3	7	3	0

¶ If ye wyll multiply this number 2345 by this nũber 1234, set them fyrste as ye se here 2, vnder them drawe a lyne: then begyn with the fyrste figure of the multiplycatour, whiche is 4, and by hym fyrste accordynge to the rule multyplye all the multiplicable nũber throughout, sayenge 4 tymes 5 is 20, sette the cypher vnder the lyne reseruynge the artycle 2 to the nexte place: then to the seconde place, 4 tymes 4 is 16, to that put youre reserued article 2 and it is 18, set the dygette 8 vnder the lyne reseruynge the artycle 1: then to the thyrde place, 4 tymes 3 is 12 and 1 reserued from the place before that is 13, set the dyget 3 vnder the lyne, reseruynge the article 1, then to the. iiii. place, 4 tymes 2 is 8 and 1 reserued is 9,

ſet that dygette 9 vnder the lyne, and ſoo haſte thou multiplyed this nomber multiplicable by the ſeconde figure of multiplicatour, Now then accordynge to the rule afore, multiplye the multiplicable nomber by the ſeconde fygure of the multiplycatour ſayenge, 3 tymes 5 is 15 ſette the dyget 5 vnder the lyne, accordynge to the rule, which byddeth to ſette euermore the fyrſt fygure of the number multiplycate vnder the place where ẏ fygure multiplicatour doth ſtande: as here nowe thou multiplieſt the multiplicable by the ſecoud figure of the multiplicatour, whiche is 3, thã ſay 3 times 5 is 15 ſet this diget 5 vnder the lyne, and beneth the fyrſt nomber multiplicate ryght vnder the fygure multiplicatour, as thou ſeeſte in the example, and reſerue the article 1: then to the ſeconde place of the multiplycable, 3 tymes 4 is 12, and 1 that is reſerued is 13 ſet the dyget 3 vnder the lyne, as ye ſe in the example, & reſerue the article 1, and ſo to the.iii.place 3 tymes 1 is 9 and 1 reſerued is 10, ſet a ſypher vnder the lyne & re

ſerue

serue the article 1: so to the. iiii. place sayenge 2 tymes 3 is 6 and 1 reserued is 7 set it vnder the lyne, thus haue ye done youre multiplication by the seconde fygure of the multiplicatour 3. Then take the. iii. fygure of multiplicatour whiche is 2, and multiply also al the nõbers multiplicable by hym sayenge 2 tymes 5 is 10 set the sypher beneth the line right vnder the place where this figure 2 the multiplicator standith, as ye se in the example: and reserue the article 1, then to the seconde place 2 tymes 4 is 8, and 1 reserued is 9, set that 9 vnder the lyne: then to the. iii. place, 2 tymes 3 is 6, set that vnder the lyne: so to the. iiii. place sayenge 2 tymes 2 is 4 set that 4 vnder the lyne. Now begin to multiply with the fourth and last fygure of the multyplycatour, sayeng 1 tymes 5 is 5 sette the 5 vnder the lyne as I warened ye before, and as ye se in the example, then to the seconde place 1 tymes 4 is 4, set that 4 vnder the lyne, then 1 tymes 3 is 3, set that 3 vnder the lyne, then 1 tymes 2 is 2 set that 2 vnder the lyne & ye haue done your multiplica-

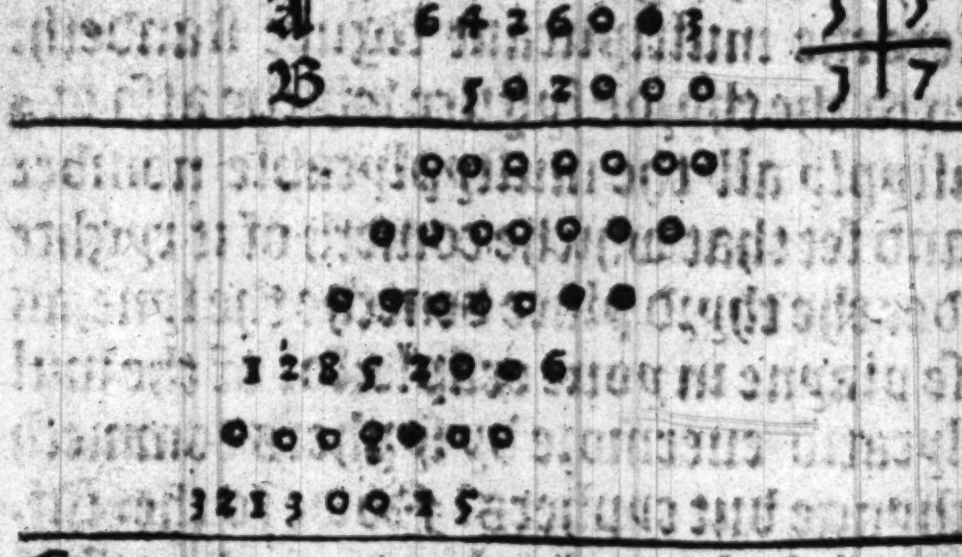
tion

tion: then muste ye adde accordynge to your rule alore all this synglemultiplied number togyther, and that the whiche cõmeth of the addition is the number that cõmeth of the multiplication of this nũber 2 3 4 5 multiplycable by this number 1 2 3 4, multiplicatour. Then come to the fyrste place, and se what is there, & there ye shall fynde a 0, set it vnder the lyne, & so to the seconde place: there ye shall fynd 5 and 8 which is 13, set the dygette 3 vnder the lyne reseruynge the article 1 to be addyd to the next place: then come to the. iii. place, there is 0, 3 and 3 whiche is 6 to that adde the reserued 1 and that is 7, set that 7 vnder the lyne, nowe to the. iiii. place, 5, 9, 0, and 9 maketh 23, sette the 3 vnder the lyne, reserue the article 2, so to the. v. place 4, 6, and 7, is 17, to that adde the reserued 2, whiche maketh 19, sette the 9 vnder the lyne, and kepe ỹ article 1 in mynde then to the. vi. place 3 and 4 is 7, and 1 reserued is 8 set it vnder the lyne, then too the. vii. place, there fynde ye but 2, wherfore set it vnder ỹ lyne, and then haue ye

done

done: so that this summe vnder the lyne is the hole nuumber multiplicate

¶ An other example of multiplication.



¶ Your figures set after this sorte, A is the multiplicable nomber. B is the nuumber multiplicatour. C is the number multiplicate, which commeth of the addition of all the seuerall numbers togyther standyng betwen the lynes. Begyn then your worke, takynge the fyrst fygure of B, the multiplycatour which is ○ & by hym multyply all the figures of A, the multiplicable

ble and that that proceded of it set vnder the lyne as ye se: and so to the seconde figure of the multiplicatour which is also ○ multiplie all the figures of A by it lyke wyse, and set that whiche cometh of it vnder the lyne, ryght vnder the second place where the multiplicant figure standeth: then to the thyrde figure whiche also is ○ multyply all the multyplycable nomber A, and set that whiche cometh of it ryghte vnder the thyrd place benethe the lyne, as ye se playne in your exãple: for of the multiplycatiõ euermore by syphers commeth nothynge but cyphers. Nowe to the. iiii. place of B, the multiplicatour, there shal ye fynde the figure 2, multiply then all A the multiplicable nomber by this figure 2 sayeng 2 tymes 3 is 6 set that 6 vnder the lyne ryght vnder the place where the multiplicatour 2 standeth, as it appeareth in youre example: then to the seconde place, 2 tymes ○ is nothynge, sette that ○ vnder the lyne nexte the afore sayde 6, and so to the thyrde place, 2 tymes ○ is nothynge, sette the figure of nothynge downe vnder

der the lyne, and so to the fourthe place, 2 tymes 6 is 12 sette the dygette 2 vnder the lyne and reserue the article 1 to the nexte place: then come to the .v. place, 2 tymes 2 is 4 and 1 that I reserued is 5, set that 5 vnder the lyne: nowe come to the syxthe place, sayenge 2 tymes 4 is 8 sette that 8 vnder the lyne: so to the seuenthe place, 2 tymes 6 is 12, sette the dygette 2 beneth the lyne, and reserue the artycle 1 to be sette in the nexte and laste place as ye se in the example. Thus haue ye multiplyed A the multiplycable by .iiii. fygures of B the multiplyratour, therfore nowe take 0 the .v. fygure of the multiplicatour: and by also multiplye all the fygures of A, the multiplicable, and thereof shall come all syphers to be set vnder the lyne, as ye se here in the coppye. Then to the syxthe fygure of B, the multyplycatoure whiche is 5, by this 5 also multyplye all the fygures of A the multiplitable sayeng 5 tymes 3 is 15 sette that 5 beneth the lyne ryghte vnder the syxthe place wher

the multiplicacion stondeth, as is to se in the coopie: and reserue the article to the nexte place, then come to the second place and say 5 tymes 0 is nothynge, sette the 1 whiche ye reserued in your mynde vnder the lyne, and so to the thyrde place sayeng 5 tymes 0 is nothynge, set the 0 vnder the lyne: then to the fourth place sayenge, 5 tymes 6 is 30, set the cypher 0 vnder the lyne, reseruyng the article 3 vnto the next place: then come to the .v. place sayeng, 5 tymes 2 is 10, and 3 that I reserued is 13 set the dyget 3 vnder the lyne, and reserue the article 1 to be added to the nexte place: to the .vi. place sayenge 5 tymes 4 is 20 and 1 reserued is 21 set 1 the dygette vnder the lyne reseruyng 2 the article to the next place: then to the .vii. and laste place sayenge 5 tymes 6 is 30 and 2 that was reserued is 32 set the dyget vnder the lyne and reserue 3 the article to be set in the nexte place beneth the lyne as ye maye se by the example, and so is all finished: Then gether all these particular summes drawe them, and adde all them together, set-

tyng

tynge euer that whiche cōmeth of the addycyon, vnder the lyne, as is in the example: the whiche shall amounte vnto this summe, 3225853506000, & this is it that cōmeth of the multiplicacyon of the sum A, by the sum B.

¶ Sertayne examples of multiplicacyon in the whyche ye may exercyse youre selfe to be the more practizyd in it.

	A 3452367
¶ To multiplye by,	B 8892539
	31071303
	10357101
	17261835
	6904734
	1071303
	27618936
	27618929
Sum.	30700308189819

	64970		7432
To mul.	13	To mul.	324
	194910		29728
	64970		14864
Sum.	844610		22296
		Sum.	2407968

¶ As for the multiplycacyon by squares is nother worth the writynge nor the readynge: And where as in other copies is set duplacyon, triplation, and quadruplacyon, all that is superfluous, for so muche as it conteyned vnder the kynde of multiplicacyon: and they that are experte in this feete, maye ryghte well perceaue it.

¶ The proke of multyplycacion.

The proke of multiplicacyon maye be by two meanes. By the subducyng out of all the 9: and the second way is by partycion. As concernyng the fyrste waye: ye shall fyrste make a crosse, then beholde the multiplicable nomber, and subdue oute of it all the nynes, and that that remayneth not able to make 9 sette it at the vpper ende of the crosse: then come to the multyplycator, and do lykewise in hym, and that which remayneth all the 9 beynge subducyd, set it at the vnder parte of the crosse: then multiplye the fygure standynge in the vpper part of the crosse by the fygure standyng in the nether part

of

of the crosse, and out of the same that com meth of it take 9 as ofte as ye can: and that that remayneth not able to make 9, set it at the right syde of the crosse: then come to the totall sum multiplicate, and subduce all the 9 out of hym lykewyse, & that whiche remaineth not able to make 9, set it at the lefte syde of the crosse, and if it be lyke the figure standinge at the ryghte syde of the crosse, then is it well, otherwyse it is not well.

¶ An example.

A	7963
B	1852
	15926
	39815
	63704
	7963
C	14747476

¶ To knowe whether the sum C, be the very sum which cõmeth of the multyplycation of A, by B. then firste subduce all the 9 that ye fynde in the multiplycable A, and the rest set it at the vpper ende of

the crosse, whiche ye shall fynde to be 7: Then to ỹ multiplicatour B. do lykewise and se what remaineth, and there remayneth also 7, set ỹ also of the nether ende of the crosse: then multiply this 7 standynge in the vpper ende by 7 standynge in the nether ende: and therof cõmeth 49 when thou hast takẽ all the 9 out of this 49 there wyll remayne 4, the whiche thou shalt set at the ryghte syde of the crosse, Then come to C, the totall sum of ỹ multiplication & there lykewise take out all ỹ 9 that ye fynde there: and the reste not sufficient to make 9 set it at the lefte syde of the crosse, the which thou shalte fynde to be 4, and for by cause that this 4 to be set at the left syde is lyke the figure stãdyng in the righte syde (for that is 4 also) therfore this multiplycacion is good and wel made: & so lykewyse in all other exãples.

¶ The proffe by Partitiõ is to diuide the total sũme C by the multiplicator B and yf ỹ quocient be iust A than is it wel multiplyed other els not. But this waye can ye not practyse, vnto such time as ye haue

lear

learned the feate of Partition.

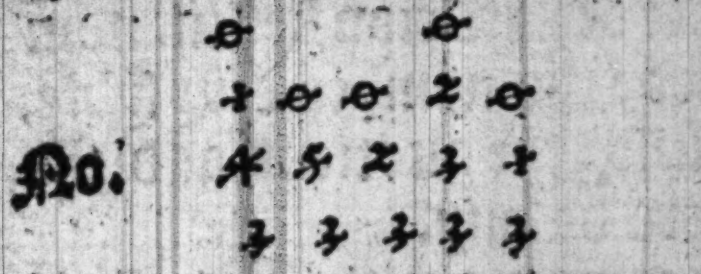
¶ Of partition the fourth kynde of Algorisme.

PArtition is a parte of algorisme, by the whiche ye maye easyly diuyde any greater sum by a lesse or equall shewynge howe oftentimes the diuisor is contayned in the nomber diuysyble.

¶ In this feate of partition be. iiii. nombers to be noted: the nomber diuysyble, the nomber diuisor, the quotient, and the remayne yf there be any.

¶ Before you come to partition it shall be very nedefull and necessarie for you, ryght perfytely to know the table of multiplycacion of dygettes: whiche is set in the chapter of multiplycació: For vnlesse that ye know that perfitely ye shal stycke greatly not only in multiplicacion, but also in this feate of partition, and that exactely had in memorye, the rest shall be farre easyar. As for example. yf ye wyll knowe howe often tymes 7 is contayned in 63 ymagyn by 7 by that this 7 shulde

be contayned 8 tymes: then yf ye knowe without the booke perfytly the forelayde table ye shall se that 8 tymes 7 is but 56 ergo 7 is contayned more then 8 tymes in 68, ymagen then and suppose it to be 9 tymes in 68, then by the table se what 9 tymes 7 is, and thou shalte se that it is 64 wherfore thou mayst conclude that in 68, 7 is conteyned 9 tymes and 4 ouer.



The proue.

To diuyde this nomber 45211 by 3 the 3 is diuisor. Fyrste ye shall set downe your nombers to be diuyded, and atthe ende of that nomber on the righte hande ye shall make a streke, wherin ye shall set your quocient, and then set downe youre

diui=

diuisor which is; vnder the fygure that standeth at the vttermost ende at the lyft hand that is vnder 4, and than say howe many tymes; maye I haue in 4, ones; and 1 remayneth ouer, set 1 within the stryke and that 1 that remayneth set ouer 4 then stryke the duysor; with a dasshe of your pen, and set the dyuisor; vnder the fygure 5, then ioyne the artycle 1 to the dygnet 5, and it is 15, then saye howe manye tymes; maye I haue in 15, 5 tymes; set that 5 in the stryke nexte to the fygure 1 and close vp the article 1 and the dyggette 5 with a cyfer 0 ouer eyther of them, and then strike the diuisor; with a dasshe of your pen, and set the diuysor; vnder the thyrde fygure 2, and se howe many tymes; ye may haue out of 2 none therfore sette downe a cyfer 0 within the stryke nexte to the fygure 5 and strike out your diuisor with a dasshe of youre pen, and set the dyuysor; vnder the fourth fygure; then ioyne the article 2 to the dyggette; and that makethe 23 than se howe many tymes; ye maye haue in 23, 7 ty-

mes, and 3 remayneth, sette that 7 within the stryke nexte to the cyfer, and the 2 that remayneth set ouer the fourth figure 3 & close vp the article 2 with a cyfer 0, then stryke out the diuisor and set it vnder the fyrste figure 1 at the ryghte hande, then ioyne the article 2 to the dygget 1 and it makethe 21, than se howe manye tymes 3 ye maye haue in 21, 7 tymes and nothynge remayneth, than set the 7 within ye stryke and close the article 2 with a cyfer 0 ouer eche of them and strike oute the deuysor with a dashe of your pen, & so the thyrde part of 45231 is 15077.

¶ The seconde example.

		0			
	0	5	0		6 diuysor.
No.	2	3	4	5	quocyent.
		6	6	6	390 $\frac{5}{0}$ part.

The proue

¶ To dyuyde this nomber 2 3 4 5 by 6, the 6 is the dyuysor, begynne your diuisi-on at the lyfte hande, as is sayde in the fyrst example, and sette youre dyuisor vn-der the thyrd figure 3, for ye may not haue 6 oute of 2, and therefore saye howe manye tymes 6 maye ye haue in 23, 3 and 5 remay-nethe, set the 3 within the stryke, & the dyg get 5 that remmynieth set it ouer the second fygure, and close the artycle 2 with a cy-pher 0 ouer it, and then strike oute the di-uisor with a dasshe of your pen, & set your diuysor agayne vnder the thyrde fygure 4, and then ioyne the artycle 5 to the dyg-get 4, and it is 54, thē se how many tymes 6 ye maye haue in 54, 9 and nothinge re-mayneth, sette the 9 within the strike and close vp the article 5 and the dygget 4 w a cypher 0 ouer eyther of them, and stryke out the diuysor with a dasshe of your pen, and set the diuisor vnder the fygure 5 and say howemany tymes 6 may ye haue out of 5, no tymes, therfore set down a cypher 0 with the stryke, and lette the 5 stande & stryke out the dyuysor with a dasshe of

your

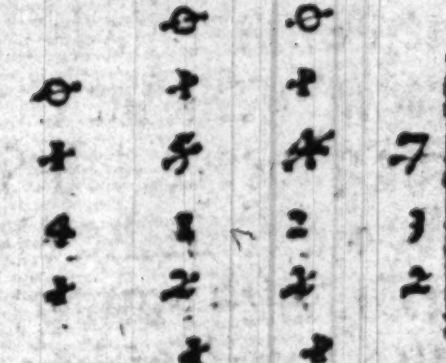
your penne, and so the 4 parte of 2345 is 590, and the 5 that remayneth sette at the ende of the quocient in this maner. $\frac{5}{6}$ So the quocyent is 590 $\frac{5}{6}$

¶ To dyuyde by 2 or 3 fygures, or by as many as pleaseth you.

¶ Fyrst set downe your nomber to be diuyded and your diuisor vnder it, begynnynge at the lefte syde at suche a place as ye may take the laste fygure of your deuysor in the laste ende, and then se howe ofte ye may haue that fygure in ỹ figure aboue it, and that set aparte for your quocyent, with the whiche quocient ye shall multiply euery fygure by it selfe of your diuisor and that that cõmeth of the multyplycacyon, ye shall abate of the fygure right ouer it, puttynge out that other fygure, and set ỹ rest aboue it, and so worke with euery fygure by it selfe throughout the diuysor. Then renewe your diuisor a fygure forwarde towarde youre ryghte hande, as before is rehersed, and so contynue your worde folowynge to the fyrst

figure

fygure of your nomber to be diuided. Then it is to be noted that yf it happe & your multiplied number that ye shulde abate be moze then the number ouer it, then foz a generall rule, ye shall not take your dyuysoz out of the fygure aboue it excepte that it maye sufficientlye yelde ynough to all the abatements of the re= sydue, as moze playnly shall apere in the example folowynge.



No.

The pzoue.

¶ Fyrst set downe this nomber 4123, and diuyde it be your dyuysoz 12, begyn youre wozke at youre lyfte hande, settynge the arty=

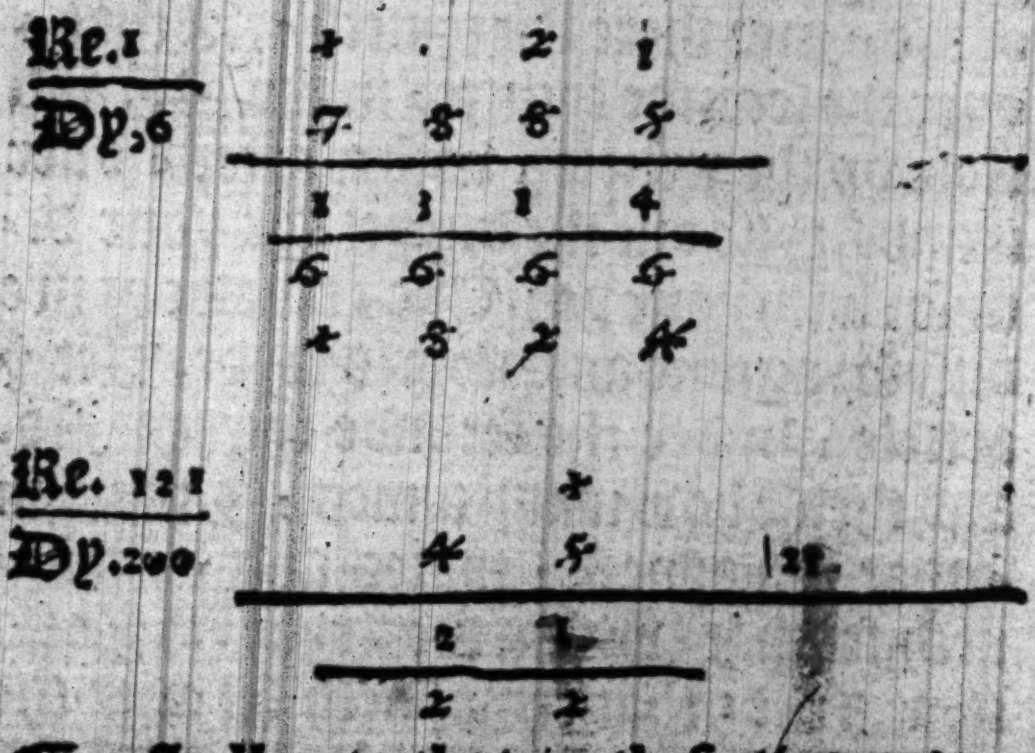
article 1 of your deuisor vnder 4, and ȳ dygget 2 vnder the thyrde fygure 1, and than se how many tymes the artycle 1 of your diuysor ye many haue in the 4 ouer it, ye wolde saye 4 tymes 1, but that can not be bycause there ye may not haue ȳ quocyent 4 multiplyed with the dygget 2 of your diuisor, for therof commeth 8, and then that 8 ye may not take out of 1 ouer the dygget 2. Therefore say againe howe manye tymes 2 maye ye haue in 4, 3 tymes and 1 remayneth, set the 3 within the stryke for the quocyēt, & the 1 that remayneth set ouer 4, and strike out the article 2 of your diuisor with your pen. Then multiplye the quocyent 3 with the dygget 2 of your diuisor, and therof commeth 6. Then ioyne the article 1 that remayneth, & the digget 1, and it is 11 therout take 6 & there remayneth 5, set the 5 ouer ȳ thyrde fygure 1, and close vp the article 1 ouer 4 with a figure ouer it, and stryke out ȳ dygget 2 of your diuisor againe but one fygure forwarde, as thus: set the article 1 vnder the

thirde

thyrde figure 1 is the No. and the diget 2 vnder the seconde figure 2 & there se howe many tymes 1 I maye haue in 5 that remayneth, 4 tymes, & yet there remayneth 1 whiche must be set ouer 5, and stryke out the article 1 with your pen. Then multyply the dygget 2 of your deuisor with the quocient 4 and it is 8, then ioyne the article 1 that remayneth, and the dygget 2 in No. togither & it is 12, then take the 8 out of the 12, and there remayneth 4, set that 4 ouer the seconde fygure 2 in the No. and close vp the article 1 with a cyfer 0 ouer it and stryke out the digget 2 of your diuysor with your pen. Then renewe youre diuysor againe as before is sayde, & set ỹ article 1 vnder the seconde fygure No. and thense how many tymes 1 I haue in 4, that remayneth 3 tymes and 1 remayneth, set that 3 within the stryke for ỹ quocient, & the 1 that remayneth set ouer the 4, and stryke out the article 1 of your dyuysor with your pen. Then multiply the quocient 3 with the digget 2 of your diuysor, and it is 6, then ioyne the article 1

that

that remayneth, and the dygette 5 in No. and it is 13. Then take 6 oute of 13 and there remayneth 7, set that 7 ouer the dygget 3 in the No. and close vp the artycle 1 with a cyfer 0 ouer it, and stryke oute the dygget 2 of your diuysor, and then the 12 parte of 4 12 is for the quocyent 3 43, and the 7 that remayneth shall be sette at the ende of your quocyent as thus 7/16



Tye shall note that in these two examples the quocient standeth in the myddes betwyxte the two lynes, and the nomber to be deuyded standeth nexte aboue the vppermoste lyne, and the deuysor standeth

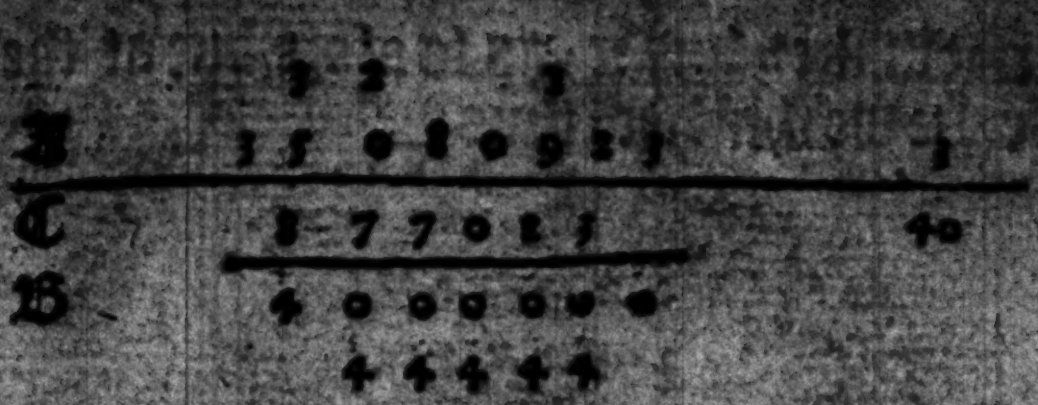
dethe nexte vnder that nether lyne. But than ye muſt marke that there be two dyuyſors, one is called the diuiſor currant, bycauſe it is alwayes remouable toward the right hande in the operation, and alſo it is ſtryken out, and this dyuyſor ſtandethe alwaye vnder the nether lyne of the quocyent. The other diuyſor is called the diuyſor permanent, for he is not remoued nor blotted as the other is, but ſtandethe alwaye permanent on the lyfte hande dyrectly againſte the nomber that is to be deuided. And iuſt ouer hym there ſtādeth the remayne of the whole nuinber whiche remayne can not be deuyded by the deuyſor, and therfore it is ſet ouer the deuyſor permanent with a ſtrike betwyxte: as ye maye ſe in the fyrſte enſaimple, where 1 is remaynynge, and 6 is deuyſor.

			3	2		4					
A	3	5	0	8		0	9	2	3		3
C	8	7	7	0	2	3	0				4
B	*	*	*	*	*	*	*				

For as vnche as in this enſaimple we

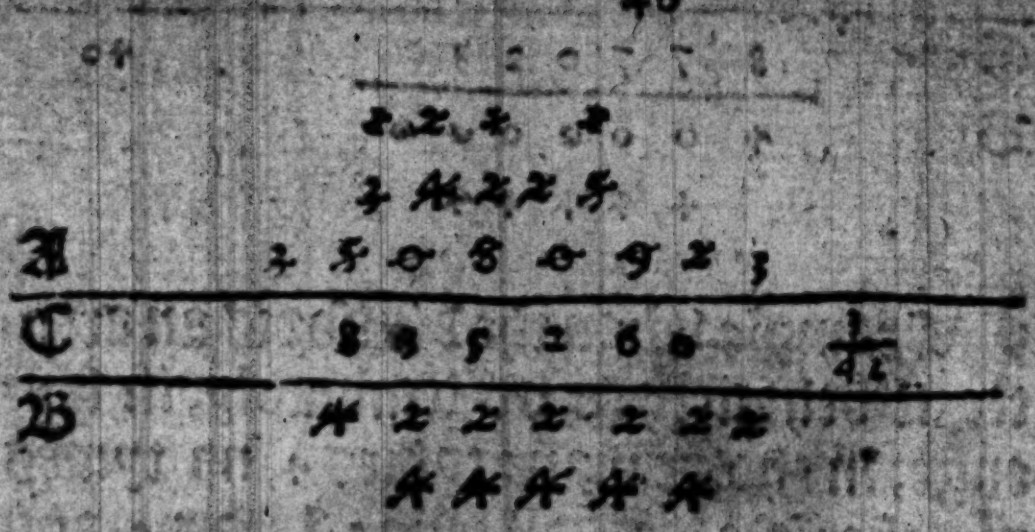
can

cannot take 4 whyche is the diuisor, oute of, therfore we shall set 4 vnder 5 & saye howe many tymes 4 haue ye in 15, ye haue 3 tymes 4, and there resteth 3, ye shall set the 3 betwyxte the two lynes, and the 3 aboue 5, then efface the 5 & the 4, then we shall lette, 4 vnder 0 & saye, in 30 how many tymes 4, 7 tymes, set 7 betwene the lynes at the right syde by the 8, and there resteth 2, whiche we shall set aboue 0, and efface 0, than set 4 vnder 8, and say in 28 howe many tymes 4, 7, & there resteth nothyng, set 7 betwene the lynes by the 7, than set 4 vnder 0 & saye howe many tymes 4 in 0, there is none, therefore set 0 betwene the lynes, then shall we saye in 9 howe manye tymes 4, 2 tymes, set than 2 betwene the lynes, and resteth 1 which we shall set aboue 9 and efface 9 than 12 howe manye tymes 4, 3 tymes, set than 3 betwene the lynes by 2, & there resteth nothynge. Than in 3 that is the laste fygure howe many tymes 4, no tymes therfore at the ende of the figure ye shall set the 3 thus $\frac{3}{4}$ and it is made,



¶ Example whan the diuisor is an artycle, it behoueth to do semblably, in sayenge, in how many tymes 4, no tymes and therfore we shall sette 4 vnder 5, and o vnder 5, and saye howe many tymes 4 in 35, 8 tymes, sette 8 betwene the two lynes vnder 5, and there resteth 3 whiche we shall sette ouer 5. Then set the 3 that standeth ouer 5 and the o together, and that is 30, than saye howe many tymes 4 in 30, 7 and alwayes so to the ende. And than we shall set 4 vnder 2, and o vnder 3, and saye in 12 in takynge the 1 that shall rest of the summe afore and shall be aboue 9, and the 2 that is after 9, howe many tymes 4, 3 tymes 4, and thenne set 3 in the number of C, agaynste 2, & than shall we cease, for there remayneth allonely 3 to be parted by 40, nowe we shall

not make ● vnder ; as is afore, but at the ende we shall set ; thus $\frac{1}{40}$



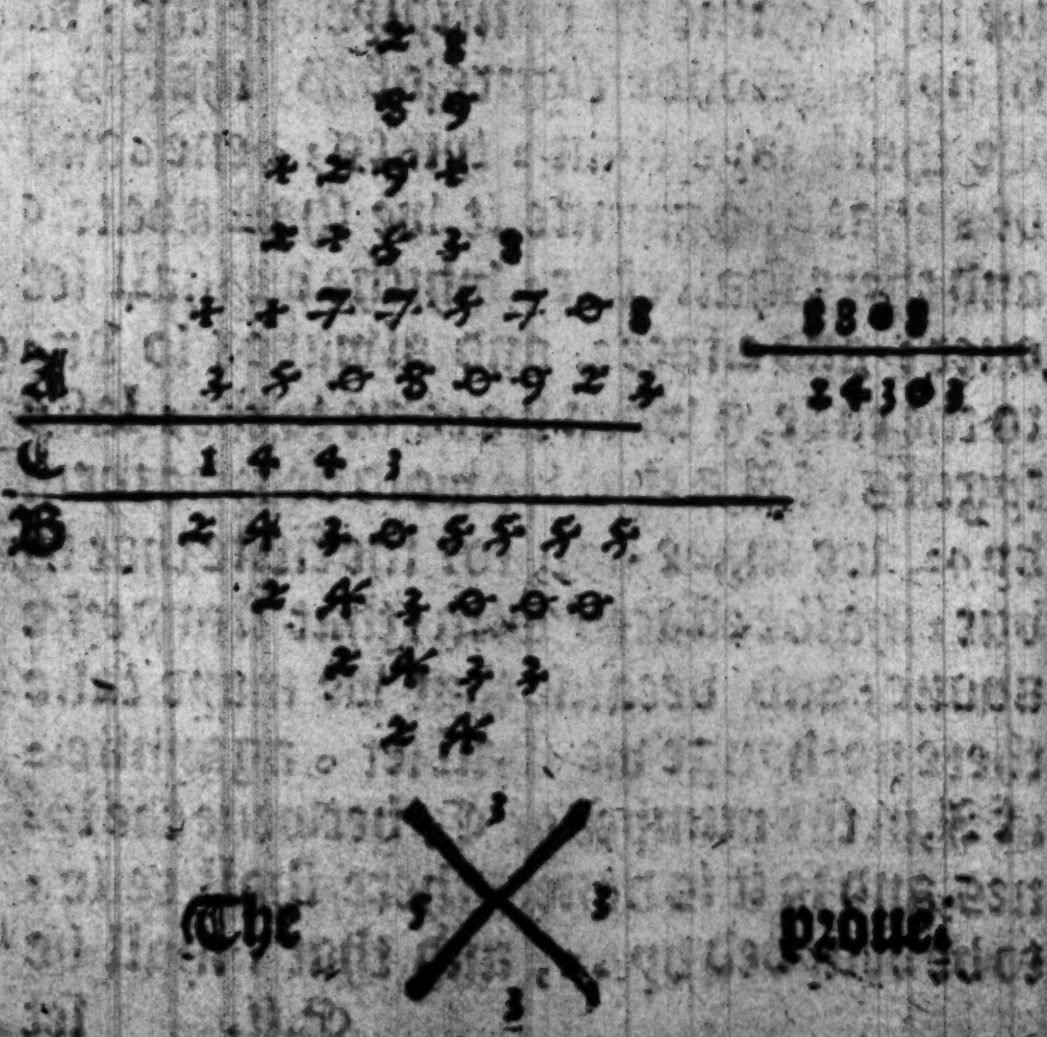
¶ Enlample whan the diuysor is compost, as in this fygure afore, we shall say in ;5 that ben nere A, howe many tymes 4 that are in the number of B, 8 tyme 4 set that 8 betwene the two lynes in the place of C, and there resteth ; whiche we shall sett aboue ; and efface ;5 of A, and 4 of B, then shall we say in multiplyenge the 8 of C, by the second fygure of B, that is 2 ; we shall saye 2 tymes 8 bene 16, than abate 16 of the number of A agaynst the same 42, and there be ; whiche is ouer ; and ● of the number, that be worth ;0 and we shall saye, of ;0 abate 16 and there re-

sleth

stethe 14, of the whyche 14 we shall sette 1 ouer 1, and efface 1, and 4 aboue 0 and efface 0, than shall we set the diuisor somwhat forward, the 4 agaynste 0, that shall be effaced, and 2 agaynste 2, and saye in 14 demonstrynge 1. that shall be aboue 1 and 4 aboue 0 howe many tymes 4, 1 tymes, set the 1 benethe the lynes in the nūber of C, and there resteth 2 whiche we shall sette ouer 4, and efface 4, than shall we saye againe in multiplyenge the 1 of C, by the seconde figure of B, that is 2 we shall saye than 2 tymes 1 bene 6 and of 8 that is againste it we shall abate 6 and there shall reste 2, whiche we shall set ouer 8. and efface 8, and alwayes so vnto the ende, & when we come to the 2 laste syguris of A, & that we wold deuyde them by 42, we maye not, for the firste that is but 2 shalbe effaced with 1 that standethe aboue 1, and because that we maye take there nothynge we shall set 0 agaynste 2 of A, in the numbet of C, betwene the lynes, and so it is done, & there shall reste 1 to be deuyded by 42, and that 1 shall be

set at the ende of the particion as thus $\frac{1}{42}$ and it is finished.

¶ And it is to be knowen that as many fygures as foloweth the firste fygure in the number of B, shall be multiplyed by them of the number of C, then the multyplycacion that therof shall come ye shall abate in the nomber of A, as in this ensample shall moze playnly appere.



¶ In this ensample in the number of B, that is the deuysor, be many figures, and therfore we shall saye, in 3 of A, how many tymes 2 of B, 1 tyme, sette that 1 vpon C and 1 that remaynethe of 3, ouer 3, and than shall we come to the 4 of B and to 1 of C, and multyplye them in sayenge, 1 tymes 4 is 4, whyche 4 we shall abate of the number of A, in takynge 1 aboue 3 and 5 after 3, that shalbe worthe 15 and therof we shall abate 4 and there resteth 11, and for the more shorteste waye of 5 onlye abate 4, and sette the 1 that remayneth aboue 5, & there resteth alwayes 11, then shall we come to the 3 of B, and to 1 of C, and make all onely the multiplycacio in saynege 1 tymes 3 bene 3, thanne of 10 abate 3 in demonstrynge 1 ouer 5 and 2 after, and then there resteth 7, whiche we shall sette ouer 0, then bycause of the cyfer 0 maye nothynge come, we shall leue it, and goo to the nexte fygure and saye 1 tymes 5 that is at the laste ende of B ben 5 but in so muche that we maye nothynge abate of 0 that is againste it in the number

ber A we shall borowe of the figure afore that is 1 onelye one and efface the 8, and sette the 7 aboue the 8, and the 1 that we shall holde shalbe worth 10 to the regarde of the number that we be in, then we shal saye of 10 abate 5 there resteth 5 whiche we shal set aboue 0, then shall we auaunce our partetour cõsequẽtly vnder the other fygurs folowynge, that is to saye tyll the laste of B, be set vnder the laste of A, and then ye maye not auaunce them any further bycause ye be come to the endes of both the numbers.

¶ The proue of diuision or partycyon is made in this maner: ye shall fyrst make a crosse, as ye dyd before in multiplycacion and abate the 9 of the partycyon, and sette the reste at the lyfte ende of the crosse seinblably of ỹ thyrde nõber that is betwirte the two lynes, and set the rest at the right ende of the same crosse, and yf there be no thynge reste set 0, Then multyply ỹ two nõbers of fygure, for they be dyggettes that one by that other, & therof abate all the 9, yf there be nothynge in the fyrste sum

number, or yf ye may not diuide it ioyne it with the saine that shall come thereof. And so the rest that maye not make 9 sette it at the ende vnder the crosse. Then shall we come to the fyrst number & semblably do away the 9 therof, & set the reste aboue the crosse, & if that aboue & that beneth be lyke, the partition is good, or yf not, it is fals. And for to vnderstande it better we make proues by ỹ ensamples aforesayde.

¶ For the fyrst we shall take the partetour that is 4 and set it at the lyfte syde of the crosse, than shall we abate the 9 of the thyrde nomber, & there reste 8 whiche we shall sette at the pryue ryght ende of the crosse and multiplye it by 4 and thereof cometh 32 wherof resteth 5, then adiouste them with the 2 farthynges that we myghte not deuyde, and they shall make 7, the whiche we shall set vnder the crosse, than shal we abate the 9 of the fyrste humber that ben the farthynges, and there shall reste 7

whiche ye shall set at the vpper ende of the crosse, and so ben the two endes lyke and it is well made.

¶ Reduction.

REduction is a kynde of Algorisme by the which ye be taught to reduce numbers of lesse denominacion or value to numbers of more denominacion or value: or yf the case requyre it, numbers of great denomination to the numbers of lesse value. Example of the fyrst. 20.li.6s.44.d. 10. far. Thus reduce the farthinges to pens, & the pens to shelynges, and the shelynges to poundes: and then this summe is 23 li.6 s.10 d, and 2 far. so haue you reduced the lesse summe to ye more. Example to reduce the more to the lesse. Take the same example agayne, and reduce the 20 li.6s 44.d.10. far, all in to farthinges, and it wyll make 22410 farthinges. Fyrst reducynge the pownes to shelynges, then to pens, & all that pens to farthinges: wherefore it shall be verye necessary for you to knowe what thynge your number dothe signifie, whether

ther wayght, mony measure, or tyme: and to be expert in all maner of accomptes: it shalbe necessary for you to knowe all maner of wayghtes, coynes, measures, and tyme. Example in englysh money 4. farthinges make 1 d. 12. d. maketh a shelynge 20 shelynges maketh a pounde.

¶ In weyght, and fyrst of troy weyght, euery pownde hath 12 ounces, and euerye ounce 20 peny weyght, and euerye penye weyght 20 graynes. &c.

¶ The haperdepeys pownd hath 16 ounces, an ounce 8 drammes, the dramme 3 scruples, the scruple 20 graynes.

¶ Of measure, the yarde hathe 3 foot, the foote 12 ynches, the ynche 3 barley cornes of length.

¶ Of tyme, the yere hath 365 dayes, the daye 24 houres, the houre hath 60 minutes, euery minute 60 secondes, euerye seconde 60 thyrde, euerye thyrde 60 quartes, euery quartes 60 fyftes, euerye fyfte 60, fyxtes, and so forth infinitely.

¶ To reduce the more summe to the lesse.

¶ when thou wylte reduce the moze to the lesse, loke howe many tymes the lesse is contayned in the moze, and by that nũber multiply the number of the moze and that that cõmeth of the multyplycacyon sheweth the moze reducyd to the lesse.
Example. I wold reduce 3 d. to farthynges loke howe many tymes a farthynge is contayned in a peny, and that is as ye knowe 4 tymes, then multiplye accordynge to the rule 3 by 4, and that maketh 12 whiche be 12 farthynges, and so 3 d, maketh 12 farthynges.

¶ An other example. Here is a summe of 23 li. and 6 s. I wolde haue this pownides, which is of moze denomynacyon reduced to the shelynges, whiche be of lesse denominacion: then loke fyrste howe ofte a shelynge is contayned in a pound, and that is 20 tymes, for 20 s. maketh a li. multiply then the 23 li. by 20, thereof commeth 560, whiche be all shelynges: to this putte the other 6 shelynges and so all is 566 shelynges.

But

¶ But ye shall note that where there be any summe of meane denominacyons be twene the more to be reduced and the lesse to whome reduccyon is made: then shall it be easyar to reduce fyrste the more to the meane, and so by the meane to the lesse.

¶ The exaimple. 43 li. 19 s. 20 d. 4 farthynges. yf ye wyll reduce all this summes to the farthinges: then shall it be better for you to reduce ỹ powndes fyrste to shelynges and then beynge shelynges to reduce them to pens, and at the laste to farthynges: so by your rule 43 powde maketh 860 shellynges, to that adde the 19 shellynges, it maketh 879, then reduce this 879 shellynges to pens: loke fyrste howe many pens are contayned in a shelynge, and that is 12, multypply 879 by 12 therof commeth 10548 whiche be all pens, to this adde your 20 pens, that maketh 10568 d. then reduce this pens to farthynges, se how many farthinges be in a peny that is 4, multypply 10568 by 4 cõmeth 42272

to

to these adde the 4 farthynges and that maketh 4279 farthinges. Thus haue ye reduced 4 li. 19 s. 2 d. 4 farthynges the moze by the meane to the lesse.

¶ To reduce the lesse to the moze.

¶ Fyrste marke howe manye tymes the moze doth contayne the lesse: and by that number dyuyde the lesse, and the quociēt sheweth the lesse reduced to the moze.

Example. I wolde haue this sum 5600 s. reduced into pownds: for howe manye tymes a pounde doth contayne a shelyng that is 20 tymes, thenne diuyde 5600 by 20 the quocyent shalbe 280, whiche be pownds: so that 5600 s. reduced to pownds maketh 280 li. & so lykewyse in all other rekeninges.

¶ When summes of dyuers denomynacyons come in addition to be addyd togither, then begynnynge at the summes of least denominatiō: adde them euer togyther tyll such tyme as they make a number of the nexte denominacion, and that that remayneth not able to make any nūber of greater denominacion, set it vnder

the

the lyne & procede to the nexte summe of greater denominatiõ, to the whiche adde the number of the same denomination reducyd out of the sum before of the lesse denominacion, so procedynge to the ende.

¶ Ensample.

li.	s.	d.	far.
1680	10	5	3
320	29	7	2
2008	3	10	1

¶ Begyn at the least whiche be farthynges: sayenge 3 and 2 ben 5, and 3 ben 8 this 8 farthynges make 2 pens, therfore take this pens and adde them to the nexte sum which is of the same denomination, sayenge 2 and 10 be 12 d. which is 1 shyllynge the 7 and 5 be 12 whiche also maketh a shelynge, so emonge these pens ye haue 2 shelynges to be added to the nexte order of shelynges, sayenge 2 and 3 be 5 and 9 be 14, put the diggette 4 vnder the lyne, and reserue the article 1 to the nexte place sayenge 1 and 2 be 3 and 1 be 4, sette that 4 vnder the lyne also and then is it 44 s. the whiche reduced to poundes maketh

2 li. and 4 s, remayneth vnder the tytle of shelynges: then put that 2 li. to the o-ther powndes, and so haste thou done in reduccion of the sunnies of lesse value to the greatest sum, which be powndes. And this is sufficiētly entreatyd of reducciō.

Here folowith of progressyon.

PRogressyon shewethe the nomber whan it begynnethe at 1 or at 2 in mountynge alwayes by one, & one, as dothe this number 1 2 3 4 5 6 7 8 9. Now yf ye wyll knowe the valour of the numbers firste ye must regarde two thinges, that is to wyte, yf the nūber procede continually without leuynge any thing betwyxte as here 1 2 3 4 5 6 7 or if it leue any thynge betwyxte as here, 1 3 5 7 9. Secondly ye must consider yf the nūmber be euen or odde. And after these two consyderacyons, then by foure rules that here folowith ye maye knowe the valour of eche whole number.

The fyrste rule is whan one number

proceth in mountinge alwayes contynually in the begynnyng, then if it ende in an euyn number, than shal we take the halfe of that euyn number, and by it we shall multiply the odde number that cōmeth of the euen number, as ye maye se in this ensample folowynge.

¶ Ensample.

1 2 3 4 5 6 7 8

4

9

16

¶ Yf ye wyll knowe howe much this number is worth, than multyply the halfe of 8 that is 4 and the number that is after 8 is 9, and then thereof commeth 36, and so muche is the summe worth, and thus may ye do with all suche lyke questions.

¶ An other example.

1 2 3 4 5 6 7

4

7

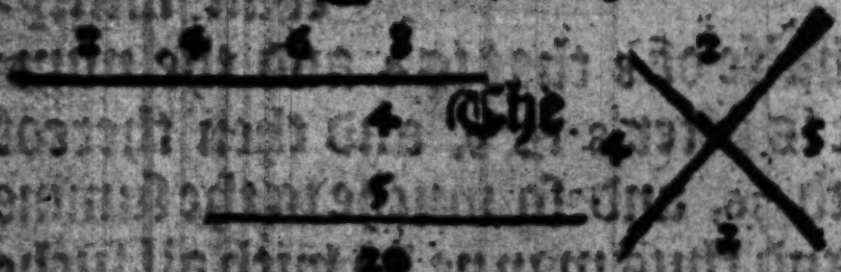
28

The proue.

¶ For to multyply this number 7 wherein the greatest and the more halfe is 4 ye muste multyply 7 by 4 and it is 28, and so muche in the hole summe,

¶ The thyrde is, yf a nũber procede not continually, and ende in an euen number ye shall take the halfe of the sayde nũber that is euen, and by hym multiplye the same that is nexte comyng after the same halfe, and in thus doynge, ye shall haue the summe of the same number.

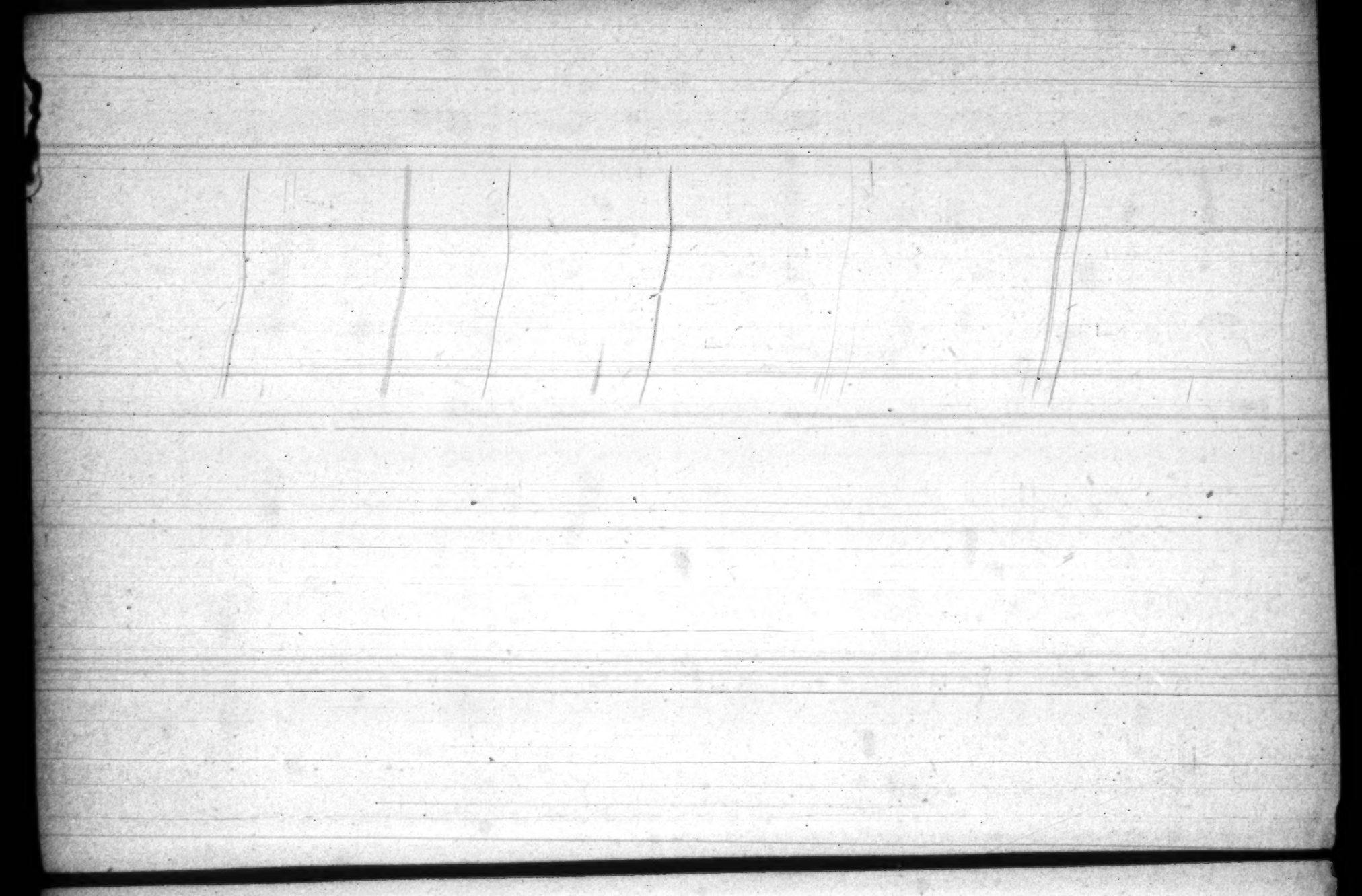
¶ An example.



¶ Yf ye wyll knowe how muche this nũber is worth, than take the halfe on: that is 4, then multyplye by the 4 the number whiche foloweth, that is 5 in sayenge 4 tymes 5 is 20, and so muche is worth the whole summe.

¶ The fourth is whan the sayd number procedeth not cõtynually, then yf it ende

in



¶ Here foloweth the rules, and fyrst the rule of thre.

Multiply by the contrary & diuide by the semblaũt or lyke. This rule maye be vnderstande in two maners. Fyrste multiplye the same that ye wyll bye by his contrary, that is to witte, by the price, and diuide by the semblaunte that is to witte, by as muche as ye haue bought: or thus, multiplye the price by his contrary, that is to witte, by the same that thou wylt bye, and diuide it by his semblaunt, that is that same that ye haue bought. And note ye why it is called the rule of thre, for with thre nõbers certayne ye may knowe and fynde the fourth nõber vncertayne. And it is a rule ryght notable and necessarye in the fayct of marchaũdyse. For to haue knowlege of this rule, it behoueth to set some rules dyfferent in maner of questyons, and fyrke in mea sures longe.

¶ The rule of hole numbers.

¶ Ef 9 elles of cloth cost 25 crones, how

moch shall cost 15 by the price. Answer. It behoueth you to set the somme, that is to wyte, 25 crones. And thā ye shal multiply by his contrary, that is to wite, by 15 that ben 375, and thau diuide them by that lem blaunt, that is to wite, by 9, and therof co= meth 41 crones and an halfe, and there re mayneth 1 crone and and halfe, the which ye shall make in ß. and there ben 54 ß. the whiche ye shall deuide by 9 and therof co= meth 6 ß. Therfore ye maye answere that the 15 elles shall cost 41 crones and an halfe and 6 ß. Nowe yf ye wyll make the proue it behoueth you to forme your question thus yf 15 elles cost. 41 crones and an halfe and 6 shyllynges, how moch shal coste 9 elles by the price. Then it behoueth you fyrst to multiplye the 6 ß, by 9 and that be 54 then it behoueth you to make thereof crones, that is 1 crone an an halfe, & then ye shall multiplye the 41 crones and an halfe by 9, and they ben 373 crones and an halfe, and then set thereto 1 crone and an halfe, and they be 375 crones whiche ye shall deuyde by 15, that ben 25, the which

xv ben the pryce of 9 elles, and so the rule is good, and thus ye may do of all other semblable.

☞ The secõde rule of hole nombers with numbers broken semblable.

¶ Yf 10 elles and ½ thyrde partes of cloth cost 35 franc. howe muche shall coste 14 elles by the pryce. Answer. For to knowe this rule and other semblable: it behoueth you to reduce the elles bought, and them that ye wyll bye all into thyrdes by cause of them that be bought, in sayenge thus, 3 tymes 10 ben 30, and set thereto 2 thyrdes, that is than 32 thyrdes. Then it behoueth you to make deuysion by 32, and than ye shall reduce the 14. elles into 1 thyrde, in sayenge 3 tymes 14 bene 42. Then 42 shall be the multiplicator. Nowe sette the somme, that is to wyte 35 franc. the whiche multiplyed by 42 be 1470 the whiche dyuyded by 32 thereof cometh 45 franc. and an halfe, and there resteth 14 fran, the which ye shal reduce to

shyllynges, and than deuyde theym by 12 and therof commeth 8 shyllynges, and an halfe, there resteth 8 shyllynges, and than shall ye make them in pens, and dyuyde them by 32, and therof cometh 3 pens, therfore ye maye aunswere that the 14 elles of clothe shall cost 45 francz and an halfe 8 shyllynges and an halfe and 3 pens.

¶ For to make the proueit behoueth you to make your worke by the contratye, for it behoueth you to multyplye the somme that the 14 elles cost by the deuisor, and dyuyde it by the multiplycatour. ¶ Therefore sette the somme vppon the lyfte syde, and fyrste multiplye the 3 d, by 32, & whan they be multiplyed ye shal make of them shyllynges, and then ye shall multyplye the 8 sh. and the halfe by 32, and then make therof francz. And then ye shall multyply the 45 francz and the halfe by 32, and deuyde them by 42, and so ye shall knowe yf the rule be well made.

¶ The thyrde rule of hole numbers with dyuers minutes.

yf

Tyk 4 elles and 2 thyrdes of clothe coste 10 crones, how moch shall coste 6 elles & 2 quarters by the pryce, For to know this rule, it behoueth you fyrst to reduce the 4 elles and 2 thyrdes thus, 3 tymes 4 ben 12 And than ye shall adioyne the 2 thyrdes, & than it is 14. And than the elles thatye wyll bye, ye shall reduce theym in to one fourthe thus, 4 tymes 6 ben 24. And theu set the 2 quarters therto and than there is 26 quarters. And than ye shall multiplye that one by that other, that is to wytte the nombrant of the fyrste by the denominat of the seconde, in sayenge 4 tymes 14 ben 56. And those 56 shalbe the deuysor. Than multiply the numbrant of the seconde, by the denominant of the fyrste in sayenge 3 tymes 26 ben 78, and those 78 shall be the multiplicator. And therfore set 10 crones and multiplye them by 78, and deuide them by 57. And ye shall fynde that the 6 elles and 2 quarters cost 13 crones and an halfe, 11 shyllynges & 5 pens. And there resteth 3.

The example.

Deuisor			M
59	142	246	78
10 crones	246	5	
	3	4	

¶ If 4 elles $\frac{2}{3}$ coste 10 crones, 6 elles $\frac{2}{4}$ shall coste 13 crones and an halfe 15 shyllynges 5 pens, there resteth 8.

For to make the proue it behoueth you to worke the cõtrary, for it behoueth you to multiplye the somme by the diuisour, that is to wyte, by 59, and make diuision by the multiplicatour, that is to wyte, by 78 and ye shall fynde 10, otherwise yf there be more or lesse the rules lie falfe.

¶ The fourth rule conteining hole nombers to the marchaundyse that ye haue bought and minutes to the same that ye wyll by.

¶ yf 8 elles of cloth cost 15 crownes, how much shal cost two quarters by the price. For to know this rule ye must reduce the elles into quarters, in sayenge 4 tymes

ben 32 then 32 shall be the deuysor, and the 2 quarters shalbe the multiplycator. Nowset the 15 tvonesand multyply them by 2 quarters, and diuide by 32 and ye shall fynde that the 2 quarters coste 0 crones and the halfe 15 shyllynges and an halfe 3 pens. For to make the prouf ye must worke the contrary, for ye shall multiply the somme that the 2 quarters coste, that is to wytte, 0 crones, and the halfe 15 s. and an halfe 3 pens by 32 and dyuyde them by 2.

¶ The rule of rounde measures, that is to wyte, measure of corne of wyne and oyle.

¶ Fyrste it behoueth you to presuppose and knowe the measures of corne.

¶ One muy is worth 12 septiers

¶ One septiers is worth 4 mynotes.

¶ One mynot is worth 3 bussheles.

¶ One bussheil is worthe 4 quarters.

¶ The measures of wyne.

¶ One muy of wyne holdeth 36 septyers
¶ The septyer holdeth 4 quarters.
¶ The quarte holdeth 2 pyntes.
¶ The pynt holdeth 2 choppynes.
¶ The choppyne 2 halfe septiers.
¶ The halfe septer 2 possions.

¶ The fyrst rule.

¶ If the muy of corne cost 10 francz, how moche is worth the bussel. Answere. For to knowe this rule ye muste knowe how many bussels ben in 1 muy, Therefore multiply the muy by 12, and than by 4, & than by 3, whiche ben 144 busselles, the whiche shall be the deuysor of 10 francz therfore deuyde 10 by 144. And therof commeth 1 sh 4, d. and an halfe, resteth 24. d. Therfore the bussell costeth 1 sh. 4 pens & an halfe, resteth 24 d.

¶ The seconde rule.

¶ To the contrary, yf the bussell cost 1 sh. how muche shall coste a thousand and 4 hondreth Muys by the pyece. Answere, For to knowe this rule, it behoueth you

to

to make all the Muys in busshels. And there be 201600 busshels, the whiche it behoueth you to multiplye by 2, and there be 403200, and of them ye shall make crones. Therfore deuyde by 36, and there ben 11200 crones. Therfore ye maye aunswere that yf the busshell cost 2 ß. a thousaunde and 4 hondreth muys shall cost enleuen thousand and 2 hundreth crones, and thus ye may do of all other semblable.

¶ The thyrde rule.

¶ Yf the septier of corne be worth 1 francz & the lofe of peny torneys weyght 12 ounces, how mych ought it to weygh whan ỹ septer is worth 15 tornoys. Answere. Multiply the fyrst nõber by the seconde, that is to wytte, 20 by 12, and deuyde it by 15, & ye shall fynd that it ought to wegh 16 ounces. And thus ye may do of al other lyke.

¶ If the muy of wyne be worth 12 francz howe muche ought the pynte to be worth Answere. For to knowe this questyon, it behoueth you to reduce the 12 muys into septyers, from septiers into quartes, and

from quarters into pyntes, and that ben 188 pyntes. And than ye shall reduce the 12 francz in to ſz. that ben 240, and that into pens, that bene 2880 pens, the whiche behonethe you to deuyde by 28 & it cometh to 10 d. Therfore yf the muye of wyne coſt 12 francz, the pynte is worthe 10 d. But it is requiſite that the Tauerner haue ſome gaynes yf ye ſell 12 d. the pynt. ¶ demaunde howe moche ſhall he wynne vpō the muy: Anſwer. He ſelleth it 2 d. moze than it is wozth therefoze multyply 288 pyntes by 2 and they be 576, the whiche ye may deuyde by 12 and ther ſhal be 48 ſz. Therfore may ye anſwere that he getteth 48 ſz. vpon the muy.

¶ yf the muy coſt 10 francz how mych is wozth the pynt. Anſwere. It behoueth you to do as is aboue ſayde: and ye ſhal fynd that itis wozth 2 pens and 1 thyrde.

¶ yf the pynt coſt 6 pens, how much ſhal coſt 12 muys by the pyrce. Anſwere. It behoueth you to know how many pyntes ben in a muy, that is 288, multyplye 12 muys by 288 that is 3456 pyntes. And

than

than multiply the pyntes by 6 that bene 207,6, of whome ye shall make ſz by diuyſion. and there ben 1072 ſz, and of shyllynges ye shall make francz. Therefore ye shall make diuyſyon by 26, ye shall fynde 26 francz 8 ſz. Therefore ye maye aunſwere that the 12 muys shall coste 26 francz 8 ſz.

¶ In ſo myche as competently we haue tracted of the rule of thre in the kayet of meaſures, it is expediente that we tracte therof in the kaycte of weyghte.

¶ Yf an hondzeth poundes of peper coſt 20 ſz. how muche shall coſt 6 pound by the pzice: Anſwere. Fo; to knowe this queſtion, ye muſt multyply by the contrarye and deuyde by the ſemblaunt, that is to wyte, multiplye by 6 and dyuyde by 100, and ye shal fynde that the 6 poundes shal coſt 1 francz, and 4 ſz. To make the pzoue ye muſt multiplye by 100 and dyuyde by 6. Now I demaunde of the 6 poundes coſt franc 4 ſz, how moche is wozth the ounce.

Fo:

For to knowe this ye shal make the poun
des in ounces, the whiche ben 96 ounces,
& then make the money in pens, thewhich
ben 288 d. the whiche ye shall deuyde by 96
and therof commeth 3 pens, therefore the
ounce shall coste 3 pens.

¶ If one li of saffron cost 3 francz and an
halfe, how muche is worth the ounce. An
swere. It behoueth you to knowe that in
a pounde ben 16 ounces, therfore deuyde
the 3 francz, and the half by 16 and ye shal
fynde that the ounce is worth 4 sz. 4 d. and
an halfe, & thus ye maye do of other lyke.

¶ If 4 pounde of saffron cost 16 fran. 6 sz
8 d. howe much shall cost 3 quartrones by
the pryce. For to knowe this rule, ye shall
reduce the 4 li. in thyrdes and shall saye 3
tymes 4 ben 12, and 1 thyrde ben 14 then ye
shall multiply by 4, and shall say 4 tymes
14 ben 56 the deuysor, than for the seconde
number we shall say, 3 tymes 3 ben 9 four-
thes or quarters, the whiche 9 shall be the
multiplyer. Now set the 16 francz 6 sz 8 d.
tournoys, & multiplye them by 9 and de-
uyde them by 16, and therof cometh 1 fran.

and

and an halfe, 2 ſ. 6 d. therfore ye may anſwere that the 3 quarters ſhal coſt 2 franc & an halfe 2 ſ. 6 d. For to make the proue ye muſt worke by the contrary in multyplyenge by the diuyſor, that is to wyt by 56 and make diuyſyon by 9, and ſo maye ye do of other ſemblable.

¶ If one pound of tyn coſt 9 blances, how many hundreth ſhall I haue for a thouſand and 4 hundreth francs. It behoueth you to knowe how moch is worth ỹ hunderth by 9 blances the pound. And ye ſhal fynde that there is 12 francs and an halfe. Now make diuyſion of 1400 frances by 12 frances and an halfe, ye ſhall fynde 112. Therfore ye maye ſaye that I ſhall haue 112 pound of tynne for 1400 frances,

And alſo as we haue made this rule, ye maye do in all other marchandyſes, as in lead, yron, ſpyces peper, ſuger. And as we haue done of poundes ye maye do of quartrons, ounces, & al other weyghtes,

¶ A rule whiche is without tyme

THre marchauntes put theyr monye togyther for to haue gaynes, ỹ whi-

che

che haue boughte suche marchaundyse as hath cost 125 francz, whereof the fyrste hath laide 15 francz. The seconde 64 fz. and the thyrde 36, fz. And they haue goten 54 franc. of clere gaynes. I demaund how shall they deuide it, so that eche man haue gaines accordynge to the moneye that he hath layd downe. Answer. In all suche rules and questions ye shall multiplye eche one after the money that he had layde, therfore multiplye the gaines for the fyrst by 15 and deuide by 125, that is the diuisor comunne. For the seconde multiplye the gaynes by 64, and dyuyde by 125 the diuisor comunne. And for the thirde multiply the gaines by 36, and dyuyde 125 the deuysor commune. And for to fynd the deuysor commune, ye shal set togither the multiplycatours, that is to wyte 15, 64 and 36 which is 125 the deuysor commune. And so shal ye do in al rules of company Nowe ye maye fynde & knowe how moch eche one hath of gaines, and ye may se it by the ensaumple here present.

The fyrste hathe 10 fz and halfe 2 fz. The

second

seconde hathe 27 fz & halfe 2 ſz. and halfe 5 d. & halfe, reſteth 2 d. and halfe, The third hath 15 fz and halfe 5 ſz. reſteth 60 pens.

256436 125

Multiplicatour Dyuyſour.

And they haue yet to be deuyded among them of reſtes 62 d. and and halfe.

¶ For to make ỹ proue it behoueth you to diuyde the reſtes, and than reduce all togithers, and ye ſhall fynde the ſomme diuided, for all the rules of company ben proued by addicion of ſommes.

¶ The seconde rule of hole tyme.

¶ Foure marchauntes laye money toge ther for wynninge for a certaine tyme, of whome the fyrſte hath laide 10 fz. for two yere. The second 20 fran. for 3 yere. The thyrde 100 francz for one yere. And the fourth hath laide 40 franc. for 4 yere: and they haue gayned 454 fran. I demaunde how moch eche one ought to haue of win nynge after the money that he hath layd, & after the tyme that he hath holden his money in gayne for company. Answere.

For

For to knowe this rule and other semblable, ye shall multiplye the monye that eche one hathe layde by the tyme that he hath holden it in companye. Example: The fyrste hath layde 10 fran. for 2 yere, therfore it behoueth you to multyplye 10 by 2 in sayenge 2 tymes 10 ben 20. For the seconde 3 tymes 20 ben 60. For the thyrde 1 tyme 100 is an 100. For ỹ fourth 4 tymes 40 ben 160. Then it behoueth you to fynd a dyuysor cõmune, for eche hath his multiplycator, that is to wytte, the same that he hath layde, and for to fynde it ye shall sette together all the multiplycatours, that is to wytte the 20, 60, 100, 160 the whiche maketh 340, therfore these 340 shall be the dyuysor commune to all, thenne howe muche eche one oughte to haue ye maye se by the ensample here folowynge 494 ſ. The fyrste hath 26 francz and halfe 4 ſ. one peny, resteth 140. d̃,
The seconde hath 80 frances 2 ſ 4 d̃. reste 80 pens
The thyrde hath 134 frances 1 ſ. 5 pens, reste 20 pens.

The

The fourth hath 213 franc. and an halfe 2 ſz and a halfe 5 d. reſt. 100 pens.

20, 60, 100, 160, 340

Multiplycatours. Dyuyſour.

Of reſt they haue to deuide one peny.

¶ The rule of company where as is hole tyme and partes of tyme.

Thre marchauntes lay money in cõpany for to haue gaynes thereby, of whome the fyrſte hathe layde 30 frances for two yeres. The ſeconde hath layde 40 fran. for one yere & thre monethes. And the thyrde hath layde 60 fran. for thre yeres & two monethes. And they haue gayned with this money 44 franc. I demaũd howe they ſhal deuyde it to the ende, that eche one haue his right after the money and the tyme that they haue ſette and holden for to gayne. Anſwer. For this rule & all other ſemblable, ye ſhall multiply the tyme by ẏ money, as we haue ſaide aboue but for as much as there be monethes ye muſt ſet & reduce all the tyme of eche one in monethes, and alſo yf there were anye

dayes ye ſchulde ſet all the tyme in dayes. The fyrſte hathe layde 30 frances foꝛ 1 yeres, in 1 yeres ben 24 monethes, there-foꝛe multyplye 30 by 24 there bene 720, and theſe 720 ſchalbe the multyplycatoure of the fyrſte. The ſeconde hathe layde 40 fran. foꝛ 1 yere and 3 monethes, in one yere ben 12 monethes, and 3 dothe make 15 monethes, multyplye 40 by 15, they make 600 whiche is the multiplycatoure of the ſeconde. The thyꝛde hathe layde 60 francz foꝛ 3 yeres and 2 monethes, 3 yeres ben woꝛth 36 monethes and 2 bene 38 monethes. Nowe multyplye 60 by 38, and there ben 2280, which ſchall be the mul tiplicatour of the thyꝛd. Now foꝛ to haue a dyuyſoꝛ comune, ye ſchall ſet togyder all the multiplycatours that is 3600 the dyuy ſour comune. They haue to deuyde 44 francz. The fyrſte hath 8 francz, and halfe 6 ſz reſt 0. The ſeconde hath 7 frances. 6 ſz. and half. reſt 0. The thyꝛde hath 27 francz and halfe 7 ſz. 4 pens, reſt 0.

720, 600, 2280,, 3600.

Multiplycatours Dyuyſour

¶ A rule of dyuers syluer and dyuers tyme.

Thre marcaũhtes haue made compayne togyder of whom the fyrst hath layd 10 francz. 4 shyllynges for 2 monethes. The seconde hath layd 15 frã. for one yere. And the thyrde hath layde 6 francz 7 ℔ for 8 monethes, and they haue goten of this money 24 francz. How they shall dyuyde it after the money and after this tyme I demaunde. Answere. For to knowe this rule and all other semblable it behoueth you to reduce the money of euery man in shyllynges. And all the tyme in monethes. And then multiplye the money by the tyme. Ensample. The fyrste hath layde 10 francz that ben 200 ℔. and 4 ben 204 the whyche ye shall multyplye by 2 monethes, and they shall be 408 the multiplicatour of the fyrste. The seconde hath layd 15 francz for one yere, and in 15 francz ben 300 ℔. and in one yere ben 12 monethes, therefore multiplye 300 by 12, and there shall be 3600 the multyplycatour of the seconde. The thyrde hathe

layde 6 francz 7 shyllynges, and in 6 frā. ben 120 sh. and 7 ben 127 sh. for 8 monethes, therfore multiply 127 by 8, and they shall be 1016 the multiplicator of the thyrd. And for to haue the deuysor comune, ye muste reduce togyther all the multiplicators, & that shall be the deuysor commune, as ye may se by the example folowynge. They haue 24 frances of wynnynge.

The fyrst hath 2 francz and halfe 8 sh. and halfe 5 pens and halfe restethe 1360 pens.

The seconde shall haue 17 francz, 3 sh. and halfe d. resteth 1952 pens.

The thyrde shall haue 4 sh. & halfe, 7 sh. pens, & halfe resteth 17112 pens.

408, 3600, 1016 5024.

Multiplicatours. Dyuysor.

And they haue to deuyde 1 d. of the restes For to make the proue ye shall reduce to gyther the thre sommes that they haue had. And yf there be more or lesse the rule is euyll made.

¶ Here foloweth the rule of company of factours with marchauntes seruaūtes.

Of

Of this rule of factours ye may make 3 rules in maner of questyōs that fall amonge marchauntes. Example, 3 marchauntes 5 factours, and 3 seruauntes or barlettes haue made companye together, and haue clerely gotten 150 fran. wherof the factours oughte to haue the halfe of the marchauntes, and the seruaūtes the thyrde parte of the factours, how shall they dyuyde these 150 franc. Answer For all suche rules and questions it behoueth you to fynde a nomber wherin is an halfe and a thyrde, and that shal be 6, and these 6 shalbe for the marchaunt. And the halfe of 6 ben 3, that shall be for the factours, and the thyrd part of the factours is 1 whiche shall be for the seruauntes. And than ye shall multyplye the one by the other, that is to wytte, the personages by theyr nomber, 6 tymes 8 ben 48, and these 48 shall be the multiplicator of the marchauntes. And than there ben 5 factours, that haue 3 and 3 tymes 5 ben 15, and than there ben 3 seruiauntes that haue 1, and 1 tymes 3 is 3, & therfore the factours shall

ye multiplye by 15 and the seruauntes by 3. Nowe for to fynd the dyuysor comune ye shall set together all the multyplycatours, that is to wyte, 48, 15, 3, whiche bene 66 these 66 shall be the dyuysor commune. Example they haue to dyuyde 150 francz. The marchauntes haue 109 franc. 1 sh. and halfe 3 d, and halfe, resteth 21 d.

The factours haue 34 fran. 1 sh. and halfe 3 d. and halfe, resteth 21 d.

The seruauntes haue 6 fran. and halfe 6 sh. 4 d. rest 24 pens.

48, 15, 3 66

Multyplycatours Dyuysor.

They haue to deuyde 1 peny of restes For to make the proue ye shall dyuyde al the restes by the dyuysor comune. And than ye shall reduce all togither, for to haue 150 frances.

The rule of factours the which gate the halfe of the gayne and of the princypall.

And other rule in maner of a question a marchaunt hath gyuen 50 franc. to his factor by suche couenant that he gouerne

them

them for 10 yeres. And at the ende of the tyme, that is to wyte, at the ende of 10 yeres. And at the ende of 10 yeres, they shall dyuyde the gaine and the principall It hapneth that the factour wyll go his waye at the ende of 6 yeres, and he fyndeth that he hathe gayned a thousande francz. I demaunde how ought the sayde factour to be paied, and how mochought the said marchaunte to haue: Answere. ye ought to regarde howe moche he shold haue gained in those 10 yeres that he sholde haue holden them in gayne as he had promysed. Therfore ye maye forme the questyon. yf 6 haue gotten a thousande: howe muche shall be the gaynes of 10. Multyplye 1000 by 10 and dyuyde by 6 and ye shall fynde that he shoulde haue gutten 1666 fran, and an halfe 3 sz. 2 pens. Of the whiche gaynes the marchaunt ought to haue the halfe that ben 833 francz. 6 shyllynges and halfe and 1 peny. And than take vp those 833 fran. 6 shylynges and halfe 1 penye of 1000 francz that he hath gayned, and there re-

mayneth 166 frances, 13 shyllynges 5 pens for the factour. Nowe ye maye aunswere that the marchaũt shall haue of the gaynes 833 francz 6 shyllynges, and halfe ℞. And the halfe of the pryncypall, that is to wytte of 50, that is 25 and there ben 858 francz. 6 ß. and halfe 1 ð. And the factoure shall haue of gaine 166 francz. 13 ß. 5 pens. And of the pryncypall 25 that ben 191 fran. 13 ß 5 ð. And thus maye ye do of all other semblable. And it is proued by the reduc tyon of the two sommes gayned.

☞ The thyrd rule of factours with couenauntes, ỹ the factour shall gayne the halfe of the pryncypall.

¶ An other rule of company of factours & marchauntes with conuenaunt that the factours shall gaine the halfe of the pryncypall and not of the gayne. Example. A marchaunt gyueth vnto his factoure 400 fran. that he shall gouerne them for 6 yeres, & at the ende of the tyme the halfe of the pryncypal shal be to the factour. It happeneth the factour wyll go his waye

at

at the ende of 2 yeres, & hath gayned 200 frā. I demaunde how ought the factour to be payed. Answere. ye ought to regard howe moche he sholde haue gayned yf he had serued all his tyme, and for to fynd it ye maye worke by the rule of thre, for ye must multiplye by his contrarye, that is to wytte by 6, and diuyde by his semblaūt that is to knowe, by 2, in saienge yf 2 haue gayned 200 frances: howe muche shall 9 gayne, and ye shall fynde that he should haue gotten 900 franc, and he gayned but 200 franc. wherefore he oughte to make a gaine 400 fran. to the marchaunt: and he ought to haue the half of ỹ pryncipal, that ben 200 frances, therfore he oweth 200 vnto the marchaunte, and so he hath loste all his tyme, and 200 fran. of aduauntage for the marchaunt ought nothyng to lose lyke as he had accomplyshed all his tyme

¶ The thyrde rule of chaunges for to vse deceyte or fraude.

¶ Two marchaūtes wyl chaunge theyr marchaūdyse, & the one begyled the other

the one hath peper, and that other cloth. He that hath peper wyll sell for 25 franc. the hondereth by chaunge, whyche is no more worthe than 20 fran. in syluer contented. I demaunde for how moch ought the other to sell vnto him the elle of hys cloth, that is worth but 15 sh. to kepe hym selfe from losse. Answere. For the rule of thre ye maye saye thus, yf 20 frances of content, gyue me 25 fran. at the chaunge howe muche shall gyue me 15 of contente. It behoueth you to multiplye the 25 by 15. whiche ben 375 the whiche ye shall dyuyde by 20 and therof commeth 18 sh. 9 d. therfore ye maye say that he shall sell the elle of clothe for 18 shyllynges 9 d. And thus may ye do of all other.

¶ Two marchauntes wyll chaũge theyr marchaundyse, of whom that one hath 100 pounde of wolle, that is no more worthe but 15 crones. And he wyll chaunge wyth an other in a pyce of cloth that is worthe 21 crones, and he wyl gyue hym the wolle for 17 crones. I demaunde for how moche ought the other to sell the peyce of clothe

to

to the ende that he be not betromped.
Answer. By the rule of thre whan 15 are worth 17 demaunde howe mocbe shall be worth 21 Dyuyde by 15 and ye shall fynde the same that ye requyre.

¶ Two marchantes wyl chaunge theyr marchaundyse, and the one defraude that other that hath peper, and wyll sell it 24 fran. the hondreth by chaunge. whiche is no more worth but 20 frances in moneye content; and he wyll haue the halfe in money contente. I demaunde for howe mych ought the other to sel the elle of his cloth that is no more worth but 15 sz. Answere, ye must take awaye the money content that the other demaundeth, that ben 12 franc. for the iust price, & of the whiche he wyll sell ouer. Therefore take awaye, and withdrawe 12 of 20 franc. which is the iust price, and there rest 8 fran. for 8 and 4 ben 12, And ye maye saye by the rule of thre, yf 8 gyue me 12, what shall gyue me 15 sz. whiche is the iuste pryce of the clothe, multyply 12 by 15 and dyuyde by 8, and therof cometh 22 sz. 6 d. And therefore

the

the marchant ought to sell the elle of his cloth after 22 s. 6 d. els he shold haue losse And thus ye ought to do of al maners of chaunges and barathes, for yf he ỳ hath the peper, demaũded but the thyrde or the fourth or 2 or 3, abate all onely the same ỳ he shal demaunde, and then by the rule, as is said. And note ye well that yf he wil multiplye shyllynges, ye shall haue shyllynges. And of crones ye shall haue crones, and of frances ye shall haue frances And in lyke maner of all other.

Here folowth many rules & questiõs to haue the more knowledge of ỳ science of artimetryke, and the fyrste is of collectes and tallyages.

Tenne men owe vnto the kynge of collecte and tallyage 244 fran. I demaũde howe shall they diuyde them to the ende that eche one paye after the valour of his goodes, for it is reason that more be payed by the riche then by the poure. For he that is more endowed with goodes is more holden vnto god and to

the

the prince. Answer. It behoueth to know how muche eche one is worth in his goodes, and in his possessions.

The first is wourth 100 francz
The seconde is wourth 400 franc.
The third is wourth 154 franc.
The fourth is wourth 1000 franc.
The fyfte is wourth 1150 franc.
The syxte is wourth 40 franc.
The seuenth is wourth 440 franc.
The eyght is wourth 80 franc.
The nynth is wourth 600 franc.
The tenth is wourth 300 francz.

Nowe it behoueth you to fynde the multyplycator and the deuisor. The multyplycator shalbe eche one by hym self, and so for the first it behoueth you to multyplye by 100, for the seconde by 400. for the third by 154, and so must ye do of the other: And for to fynde the diuisor, ye shall sette togyther all the multiplicatours, as 100, 400, 154 &c. and all that togither shall be the diuisor commune, whiche is 4464 Therfore multypply the collecte, that is to wytte, 244 for eche one his valour, and dy-

uyde

uyde by 4464, or by the halfe that is 2232, and then ye shall wyte howe moche eche one ought to paye. Example.

The fyrste sholde paye 5 franc. 9 shyllynges 3 d. and halfe reste 1464.

The seconde sholde pay 12 franc. 17 shyllynges 3 pens, resteth 1392.

The thyrde sholde paye 8 frances 8 sh. 4 pens resteth 660.

The fourth sholde paye 54 frances 15 shyllynges 2 pens, resteth 1248.

The fyfte sholde paye 62 frances 17 sh. 2 pens resteth 96

The syxte sholde paye 2 frances 3 sh. and halfe 2 pens and halfe, resteth 1032.

The seuenth shulde paye 24 frances 1 shylling 0 pens, resteth 192

The eyght shoulde paye 4 frances 7 sh. 5 pens resteth 2064.

The nynth sholde paye 21 frances 15 sh. 10 pens and halfe, resteth 2088

The tenth shoulde paye 27 frances 6 sh. 7 pens resteth 624

¶ And they haue to dyuyde 2 pens and halfe of restes. Then whan ye haue all

dyuided

dyuyded and wryte the somme and the
restes, ye shall set togyder all the restes,
and diuide them by the deuysor comune,
or by the halfe. And yf there be more or
lesse. the rule is not well made, for the re-
maynant of all ought to be dyuyded by
the diuisor comune. And therroue of this
rule is reduccyon. And marke well this
rule for it is right good vnto the coun-
tre where all the goodes be praysed by al
the townes and castels, as it is in manye
places of Daulphyne, and of Prouence

¶ The rule of thre mylnes.

¶ One man hath thre mylnes of whom
one gryndeth eche day 5 septyers of corne
and the other gryndeth 7 and the thyrde
8. There commeth a marchaunt that wyll
haue grounden one hundreth septyers of
corne, I demaund how ought the mylner
to dyuyde the corne to the mylnes to the
ende that eche one haue alsone done as
an other. Answere. For to know this que
styon and rule. ye must fynde the dyuysor
and the multiplicator, the multyp. shall
be eche one by hym selfe, and the deuysor

shalbe

shalbe the thre multiplycatours set togy-
ther ỹ ben 20. Therfore yf ye wyll knowe
howe muche corne ought to be layde vp-
pon the fyrste mylne, ye muste multyplye
the 100 septiers of corne by 5 & deuyde by
20, whiche shall be 25 septiers, that shalbe
layde vppon the fyrst mylne. And for the
seconde ye shall multiply 100 by 7 and dy-
uyde by 20, and there shall be 35 septiers, ỹ
whiche ye shall putte vppon the seconde
mylne, and for the thyrde ye shall multy-
plye 100 by 8 and dyuyde by 20 & there shal
be 40 septiers, whiche ye shall put vppon
the thyrde mylne. And thus may ye do of
all other semblable. It maye be made o-
therwyse, set togyther the sommes that ỹ
thre mylnes grynd that is 20, and by the
rule of thre ye shall say, yf 20 gyue me an
100, howe moche shall gyue me 5 or 7 or 8.
And it is proued by aoditi on. Example.

100

The fyrst shall haue 25 septiers. The se-
conde 35 septiers. The thyrde 40 septiers,

5 7 8 — 20

Multiplicatours. Dyuysour.

The

The rule and questyon of a shepe herde or pastour.

FOure men haue 300 shepe or moutons, of whome the fyrst hath an 100 shepe/ the seconde 40, the thyrde 150 and the fourthe 10 And they gyue vnto a shepherde for to kepe these shepe 25 fz. for a yere. I demaūde how ought the one to paye of the 25 fran. after the shepe that he hath. And how long time ought eche one to haue hym at comense or meat. Answer. For to knowe this rule and al other semblable, it behoueth you to fynde ẏ multyplycator and the deuysor, the multyplycator of the fyrste shall be 100, of the seconde 40, of the thyrde 150, and of the fourth 10, & than set togyther all these sōmes the whiche ben 300 the dyuysour comune. Or ye may make it by the rule of thre in sayeng, yf 300 gyue me 25, howe moche shall gyue me 100 or 40 or 150 or 10, & alwayes dyuyde by 300 and thus of all other rules.

¶ Ensample of the fyrst.

And for to knowin howe many houres this vessell shall voyde, ye shall set togyder the thre nombers, that is to wyt, 1, 2, 3 which ben 3 and that 3 is the deuisor therfore dyuyde 60 by 3, and ye shall fynd that in 7 houres and an halfe it shalbe emptye And thus may ye do of al other semblable

¶ The rule and question of Saralins for to cast them within the see.

There is a galle vpon ỹ see wherein be thyrty marchaũtes, that is to wit 15 crysten men, and 15 sarazyns, ther falleth great tempest where vpon it behoueth them to cast all the marchaundyse in to the see, and yet for all that they be not in surete from perysshynge, for the galle is feble and weke, so that by ordynaunce made by the patrone, it is necessary that there be caste into the see the halfe of the thyrty machaũtes, but the sarazyns wyll not be cast in, nor also the christiens: then by an apoyntment made, they shall sette them downe vpon a rowe. & then counte them vnto 9 and he that sholde fall vpon the 9 to be caste into the see, how wolde ye

set

set them that none of the chrystyens shold be caste into the see. Answer. ye shall ordeyne them after these meters folowyng.

Post.iiii.quinq; da post duos vnū colloca
Tres numerabis, postea vnū collocabis
Vnū dic panther, & duo consequenter,
Duos post ponas &,iii.simꝰ hic apponas
Semel dic añ bis.post.ii.vnū terminabꝫ
Primi christiani, sunt saracenicq; secundi.

That is to wytte, 4 christiens 5 sarazins 2 christyens 1 sarazyn, 3 christyens 1 sarazin 1 christien 2 sarasyns, 2 christiens 3 sarazyns, 1 chrystyen 2 sarazyns, 2 christiens 1 sarazyn. Or for to know it more shortely ye may worke by this verse folowynge, by the nomber of the vouels.

Populeam virgā matrē regina tenebat

¶ The rule and question of a testament.

A Man hath made his testament, the which hath lefte his wyfe great, and hath ordeyned in his testament that yf she brought forth a sone, he shold haue two partes of his goodes, that is to wyt, of 1200 crones, and his wyfe ẏ other part,

and yf she brought forth a doughter, then the moder shold haue two partes, and the doughter the other parte. It happeneth whan the man is dede, the wyfe bryngeth forthe a sone and a doughter. I demande how shall they deuyde the 1200 crownes. Answere. ye shall set 1 for the doughter, and 1 for the mother, for ỹ mother ought to haue two partes agaynst the doughter, and set 4 for the sone for he ought to haue two partes agaynste the mother. Therfore ye shall multiply the 120 crownes by 4 for the sone, by 2 for the mother, and by 1 for the doughter. And for to fynde the dyuisor ye shall set togyther 1. 2. and 4. whyche ben 7. therfore dyuyde by 7. Example.

4 The sone shall haue 685 crones & an halfe, 7 sh. 8 d. & halfe, resteth a halfe d

2 The mother shall haue 342 crones, & and halfe a shyllynges and halfe, 4 d Resteth 2 pens.

1 The doughter shall haue 171 crones. 15 sh. 5 pens Resteth 1 d. 7

Multiplicators Deuysor.

They haue to dyuyde an halfe peny.

The

¶ The rule and question for to buylde.
And fyrste for the place.

A Man hath a groūd that is in length 100 yardes, and in brethe 70 yardes, where as he wyll edyfye and buylde houses, of lengthe 5 yardes, and 4 brethe I demaunde how many houses shall he haue vpon that ground. Answer. ye shall multyply the lenghte by the breth in sayenge 70 tymes 100 ben 7000, and eche house must haue 5 yardes of length, and 4 of brede/multyplye that one by ye other, and they make 20, whiche 20 shall be the dyuysor cōmune, therfore deuyde 7000 by 20, & ye shall fynde that there shall be 350 houses Note well this rule.

¶ The rule & questyon of the walles.

A Manne wyll make a wall 32 fote in lenghte, and 2 of thycknes, and the heyght 25 fote, and eche fote shal cost the makynge 2 sz. I demaunde how moch shall cost the makynge of all the wall. Answere. For to know this rule, ye shall multyply the lengthe by the thyckenes in

sayenge 2 tymes 32 ben 64 / & then ye shal multyplye it by heyghte in sayenge 25 tymes 64 ben 1600, and than multyply by the pyece, that is to wytte by 2 shyllynges the which ben 3200 shyllynges, wherof ye shal make francz, therfore dyuyde them by 20 and they ben 160 francz. And so moch shal coste the makyng of the wall.

¶ The rule and questyon of the couerynge.

¶ If ye wyll haue a houie couered with tyelles, ye must knowe how many tyelles behoueth you to haue vnto the length of a lygne, and how many to the bredde. Example. If the house hadde nede of 54 for the length, and 34 for the brethe, I demaunde howe many shold be requysyte vnto all the honse. Answere. Multyplye the length by the brethe in sayenge 34 tymes 54 ben 1836 tyelles, and so many must ye haue to couer the house.

The rule & questyon of a graden.

¶ A louer dyd entre into a garden for to ga=

gather apples for his lady, and vnto the
sayd gardyn ben thre gates, and in eche
gate is a porter, and whan he shall yssue
after that he hath gathered the apples, he
must gyue the halfe of his apples & one,
to the fyrste porter, and whan he is at the
second porter, he must gyue vnto hym the
halfe and one/ and to the thyrde porter ȳ
halfe and one, & whan he is forth he hath
no more but one apple to gyue vnto his
lady parambur. Idemaunde how many
apples had he gathered. Answere.
He had one, aple whan he was forthe, set
to it one, and than it is 2, and then double
the 2 and it is 4, therfore he hadde 4 at the
thyrde porter. Then to this 4 set 1 & that
is 5, and then double them and that is 10
therfore he hath 10 apples at the seconde
porter, to this 10 sette 1 and it is 11, double
them, and that be 22 apples. Therfore ye
maye say that he had gathered 22 apples.

¶ The rule and questyon of a ladder or stayre.

¶ I haue sene a stayre that had 100 step,

pes, in the fyrst steppe was 1 douste in the seconde step 2, in the thyrde 3, in the fourth 4, and so vnto 100, I was demaũded how many doustes were in al the stayre. I answered 5050. Probacyon I wyll gyue you certayne of all nomber that do procede naturally, that is to wyt, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, And infinitly as ye wyll, for all nõber naturall is ended in nomber euen or in nomber not euen, yf it be ended in nomber euen, than by the halfe therof multyply the nomber not euen, that encloseth it Example. 1, 2, 3, 4, wyll ye know what all amounteth vnto in sayenge 2 tymes 5 ben 10, for 2 is the halfe of 4, and 5 is the nomber not euen that encloseth 4, And yf the nomber ende in nomber not euen. As by ensample, 1, 2, 3, 4, 5, wyll ye knowe what all amounteth vnto. Multyply 5 by his greater halfe, that is 3, sayenge 3 tymes 5 ben 15, And thus shall ye alwayes doo in what nomber so euer it be euen or not euen &c.

¶ The rule and question of two men.

If two menne go by one waye, and that they go in to anyfarre place, and procede in such wyse, that the one procede eche daye certayne nomber of myles, that is to saye 4 and 6 moze oz lesse. And that other man goeth encreasynge the fyrste daye one myle, the seconde daye two, the thyrde thre, and so encreasynge after progressyon. Be ye all certayne that in some day the one ouertaketh the other. It is demaunded in what daye, and how many myles they shall go. Answere. Double the nomber of his mylles that goeth eche day an egall nomber of myles And of the nomber dowble take awaye one vnyte, and the remanant shall shewe you what daye they shall mete eyther o= ther

¶ Example.

We shall set it that the one goeth a daye 6 myles, double that and it is 12, and fro that 12 withdrawe one vnyte, as it is sayd in the rule, and there remayneth 11, that is the nomber of the day that they shal mete togyther. And for to know the nomber of

the

the myles that they haue gone. Multy-
plye 11 by 6 in sayenge 6 tymes 11 ben 66
myles that they hauegone. Thus ye may
knowe it by the rule of progression con-
tynued, 11 is a nomber not euen, be it ther
fore multiplyed by the greater halfe that
is to wytte by 6 in sayenge 11 tymes 6 or 6
tymes 11 ben 66. And also one onely nom-
ber amounte by progressyon, & by mul-
typlycatiō, wherby it appereth that vpon
the elleuenth day they mete eche other, &
haue gone 66 myles.

¶ The rule and questyon of the women
that bare apples to the market.

THre women bare apples well & ho-
nestly trymmed to the market, of
whome the one bare 50 the other 30,
and the thyrde 10, theyr housbōudes were
brethern and gaue cōmaūdement to them
that they shold make as good market one
as an other, that is, that they sell all after
one pryce, & that the one bryng as moch
money home as the other. I demaunde
howe that maye be done. Answer. It is
possi-

possible. For fyrste there cometh a marchaunt to her that hath 50. appels: and sayth to her howe many for one peny, and she answered 7 and so she maketh 7 d. of her 50 appels and hath remaynynge one apple. The other solde after the same pryce. And she that had 30 apples solde hers for 4. d. and she had remaynyng 3 apples. The other that had 10 apels solde hers for 4 d. and she had remaynge 2 appels. And then came there anothe marchaunt that gaue 3 d. for an apple. And so eche one bare home 10 d as ye se in this ensample. And thus may ye do of all other semblable.

The rule and questyon of the bagge

A Marchaunt hath a bagge that weygheth 19 ounces of thre metralles, wherof 7 ounces ben of golde 8 of syluer, and 4 of copre. And he wyll take therout 5 ounces. I demaunde howe moche of golde, howe moch of syluer, and howe moche of copre is in these 5 ounces. Answere, ye shall multyplye the 5 for to

kno-

knowe the golde by 7, for the syluer by 9 and for the coper by 4. And for to fynde the deuysor, ye shall sette all the multiplycators togyther, that ben 19, therfore deuyde by 19. The aunswere is in this ensample 5 ounces.

7 Of golde 1 ounce an halfe 1 peny 5 grayne. Resteth 1 peny.

9 Of syluer 2 ounces, 2 pens and halfe, 1 halfe grayne. Resteth 2 pens.

4 Of coper 1 ounce 1 peny 6 graynes. Resteth 6.

¶ Now set the remeynaūt togyther and deuyde it by the deuysor cōmune, that is 19. And it is 1 halfe grayne.

¶ The rule and question of the bell.

If a thyrcher is made a bell, and there in is put 30 pounde of golde 50 li. of syluer, 130 of tynne, and 102 of coper. When the bell is made there remayneth 48 pound in one pyece, that they wyll sell. I demaunde how myche is there of golde howe myche of syluer, how moche of tynne, and

and how moche of copze. Answere.
ye shall do as aboue is sayd of the bagge
foꝛ ye shall multiply 40 eche one by hym
selfe, and dyuyde by 282.

¶ Example.

Of golde 4 pounde 4 ounces 4 pens,
1 grayne. Resteth 6
Of syluer 7 pounde 1 ounce 11 pens.
9 graynes and an halfe. Resteth 17.
Of tynne 14 pounde 2 ounces & halfe
10 pens, and halfe 7 graynes.
Rest 114 pens.
Of copze 14 pounde 7 ounces 11 pens
and an halfe 5 graynes and halfe.
Resteth 105.

Multyplycatoꝛs, 282. Dyuysoꝛ cõmune
And all dyuyded they haue of restes 1
grayne.

¶ This rule is pꝛoued by reduction, set
to the same that remaynyth, and dyuyde
by the dyuysoꝛ cõmune, & therof cometh
1 grayne.

The

¶ The rule and questyon to chaunge golde into syluer.

A Marchaunt hath 100 francz in golde and he goth vnto a chaūger & sayth. I haue 100 francz in pyeces of golde I wolde haue the money therof in small pyces, that is to wytte, of 2 pens, of 3 pens of 4 pens, of 5 pens, of 6 pens, of 8 pens, & of 10 pens, & I wolde haue as many pyecz of one as of an other. I demaunde howe many pyeces of euery money ought the chaunger to gyue hym. Answere, ye must set togither all these nombers 2, 3, 4, 5, 6, 8, and 10, that ben 12 the deuysor commune and then ye must make of the francz pens that is 24000 pens, whiche ye shal deuyde by 12 and there be 750 pyeces of eche money, and thus ye may do of all other semblable.

¶ The rule and question of cloth of dyuers colours

I Haue a pyece of clothe wherof the thyrde part is whyte, the fourth part blacke, and 8 elles of graye. I demaunde howe moch hath it of lenghte.

In-

Answer. Set 12, for in 12 ye shall fynde one thyrde and one fourth, the thyrde and the fourth of 12 is 7, and there remayneth 5/ therfore forme the rule of thre, yf 5, be comen of 12, of how moche shall come 5 multyply 12, by 3 that is 36, & dyuyde by 5. and therof cometh 19 elles and 1 fyfte, therfore ye maye answere that the pyece of clothe hath of lenght 19 elles and one fyfte.

¶ The rule and questyon of spycerye.

¶ A bourgesse sayd vnto his seruaunte holde these 11 frances, and go and bye the peper that costeth 15 sh. the pounde, and sugre that costeth 18 sh. the pounde, & of fyne spyces that costeth 9 sh. the pounde, and gynger that costeth 11 sh. the pouude, and cloues that costeth 10 sh. the pounde, and bryng me as many poũdes of one as of another. I demaunde how many poũdes ought the apotycarye to gyue hym for 11 francz. Answer. ye shal set al the pryces to gyther 15, 18, 9, 11 and 10, that ben 63 which shall be the dyuysor, & then ye shall make

the frauncz in shyllynges, that is 280 shyllynges. And than ye shall deuyde by 6, & therof cometh 4 pound / therfore ye maye answer, that he ought to gyue hym 4 pounddes of all these spycerye.

¶ The rule and question of the egges.

A yonge mayden bayzeth egges to the market for to sell and hyzineteth a yonge man that wold play with hyz in so mich that he ouerthzoweth & bzeketh the egges euery one, & wyl not paye for them. The mayde doeth hym to be called afore the iudge. The iudge condempneth hym to pay for ỹ egges, but the iudge knoweth not howe manye egges there were. In that he demaũdeth of the mayde, she answereth ỹ she is but yonge, and can not well compte, but she and hyz moder had ordeyned and dyspoled thẽ by 2 and 2 & there remayned 1 eygge. Than by 3 and 3 & there remayned 1 / than by 4 and 4 and there remayned 1 / thã by 5 & 5, & there remayned 1 / than by 6 and 6 & there remayned 1, and at the last by 7 and 7 and there remayned none

tione/ I demaūde how many egges there were. Answer. 721. And for to proue it, multyply the nōbersone by another in sayēge 2 tymes 3 ben 6, 4 times 6 ben 24, 5 tymes 24 ben 120, 6 tymes 120 ben 720, and set therto 1 that remayned always & than they ben 721 that which ye shal deuyde by 7/& there remayneth nothyng/and so she hadde 721 egges. And fater this ensample maye the iudge iuge the yonge man to pay.

¶ The rule and questiton of money forgotten with a chaungeour.

A Nadiuocate hath gyuen to a chaungeour money, & hath forgotten howe moch. For to know howe moche and for to haue all his money, he fyndeth subtyltye that ensueth, he sayeth to one of his sonnes, of whom he hath many go vn to suche a chaūgeour & bryng me a frāce and the tenth part of the money that I delyuered hym, and so was it done And an other tyme he sayd vnto another sōne, go vnto the chaūgeour & bryngе me 2 frāces and the tenth part of the remaynant, and so he sayd vnto all, but vnto ỹ last he said

vnto the chaungeour, and bryngē me all the remaynant of the money, and so was it done, and as mouche brought ỹ one as the other. ¶ Demaunde how moche money he hadde, how many sonnes, & how moch money eche one of them brought. Answer For this thre questyons pose the nombre that they all brought, that is to wytte, the tenth ben 10, and of 10 take one and there do remayne 9, therfore ye may say that he had 9 sonnes, and eche one brought 9 fr. And for to knowe how moche he had gyuen to the chaungeour, ye must multyppl 9 by hym selfe, and it is 81. Therfore he had delyuered 81 frances to the chaungeour. For to make the proue lay 81 and take vp for the fyrst sone 1 and the tenth parte of the remaynant, and in lyke maner ye muste do of all other.

¶ The rule and question, of tyme. &c.

¶ A mā sayth yt I hadde as moch more of tyme as I haue, and ỹ halfe, the thyrd and the fourth of my time that I haue set to. I sholde haue of yeres 50, I demaund

what

what age he hath. Anſwere. Laye 12 for in
12 ye fynde an halfe, a thyrd, and a fourth
And then ſet there ones as moch, & that
ben 24, than ſet therto 1 halfe, 1 thyrde, &
a fourth of 12, and they ben 37, and theme
fourme thy queſtion. yt 37 be comen of 12
of howe moch ſhall come 50. Multyply 12
by 50 and dyuyde by 37, and ye ſhall fynde
that he hath 16 yeres 78 dayes and a halfe
10 houres reſteth 2.

¶ The rule and queſtyon for to de-
uyde dyſtrybucyons.

If a churche ben 12 chanons 9 preſtes
and 6 clerkes they haue to dyuyde a
dyſtrybucyon of 400 frnces, werof
the chanons haue 1, the preſtes 2 and the
clerkes 3. I demaunde howe moche ſhall
haue the chanons, how moche the preſtes
and howe moche the clerkes. Anſwere.
Multyplye one nomber by an other in
ſayenge 1 tymes 12 ben 12 that is the mul-
typlycatour for the chanous, 2 tymes 6
ben 12 the multyplycatour for the preſtes,
3 tyme 6 ben 6 the multyplycatour for the
clerkes. Howe moche eche one oughte

to haue ye may se in the ensample by the deuysor. Set togyder al the multyplycatours & they ben 60, the deuysor comune.

36	240	frances
18	120	frances
6	40	frances
Multiplycatours	Deuysor	60

¶ The rule and question of the speyre.

A Speyr is the halfe and the thyrde part within ẏ water, and 9 fote without. I demaunde howe mythe of lenghte hath the spere. Answere. Set 6, for in 6 is founde a halfe and a thyrde the halfe and the thyrde of 6 ben 5, and there remaneth 1, forme the rule of thre: yf 1 be comen of 6, of howe many shall come 9 multiplye 6 by 9, and they ben 54, deuyde them by 1 and they ben 54, therfore ye may answere that ẏ spere hath 54 fote of lēgth, the halfe is 27, & the thyrd is 18, and there bē 45 fote within the water, and 9 without that is 54. And so mayr ye do of all other semblable, as of a toure.

The

¶ The rule and question of two mē that went that one agaynst that other.

Two men begin to go and take theyr iourney that one agaynst that other vpō one daye and in one houre. For that one that goeth fro Parys, to Loudō and goeth euery daye 7 myles, that other goeth frome Lyon to Parys, and goethe eche daye 9 myles, and from Lyon vnto Parys ben 80 myles. I demaunde howe lōge tyme shal it be or they mete. Answer Set togyder the myles that they go in one daye, ỹ is to wyt, 7 and 9 ben 16, forme now the rule of 16 come of 1 daye, of howe moche shall come 80 that they haue to go, multyplye 80 by 1 & it is 80 they whiche he may deuyde by 16 & therof cometh 5 therfore in 5 days they mete. The proue is, for he ỹ from Parys to Lyō goeth in 5 dayes goeth 35 myles/ & that other 45 the which ben 80 myles.

¶ The rule and question of a catte.

There is a catte at the fote of a tre the lēght of 30 fote, this catte goeth vp

warde

warde eche daye 17 fote, and descendeth the nyght 12 fote. ¶ Demaunde in howe loge tyme shall she be at ỹ toppe, Answer. Take vp and abate the nyght of the day, that is 12 of 17 and ther remayneth 5, therfore the catte mounteth eche daye 5 fote/ deuyde now 300 by 5 and therof cometh 60 dayes then she shall be at the toppe. And thus ye maye do of all other semblable. For of this rule ye may make 4 questyons, as it appereth in the practyse therof.

¶ The rule and questyon of 20 scolers.

If 20 scolers owe vnto theyr host 5 d. tourneyes, how oughte they to paye, so that eche one pay his duty & gyue the money of his purse. How moche shall eche one paye. Answere. Eche one shall pay 1 peny Parys, and the hoste shall rethurne vnto him agayne 1 peny tournoys and so eche one shall paye the 4 parte of a tournoys.

¶ The rule and question of pylgrymes.

¶ Twenty pylgrymes, that is to wytte,

men

men, women, and lytell chylderne, haue spended in drinke 20. pens, wherof the men paye 3. pens, the women 2. pens, and the lytell chyldren halfe pens. ¶ I demaũde how many men, & how many women, and how many chyldren be there, for to pay this 20 pens, so that there be 20 persons. Answer. There shall be one man, 5 women, and 14 chyldren.

¶ The rule & questō of a chauntour.

¶ A chauntour hathe ethe daye of rente fro the courte of the prynce 12 sh. the which is payed by knyghtes, damoysselles, and squyres of whome the knyghtes paye 2 sh the damoysels 6 pens, and the squyers 3 pens. ¶ I demaunde how many knyghtes how many damoysels, & howmany esquyres ought there to be, to paye this 12 sh. so that there be 12 persones. Answere. There must be 3 knyghtes, 1 damoysell, and 8 esquyres.

¶ The rule and question for to dyuyne,

¶ If ye wyll cause your felowe to byleue that ye shall dyuyne: howe many pyeces

ces of syluer he hath in his ryght hande
say vnto him that he put as many pyeces
in that one hãde as in that other. And thã
that he take fyue from ỹ lyft hande to the
ryght hande and than that he put forth
of the ryght hande into the lyfe hand as
many pieces as he hath remaynyng in the
lyfte hand. And there shall remayne .x. in
the ryght hande.

¶ The rule and questyon of thre sayntes.

A Holy hermyte is ẽtred within a chur
che wherin there ben thre sayntes: ỹ
is to wyt/sayntt Peter, sayntt Paule,
and saint Francoys/this hemite cometh
fyrst to sayntt Peter and sayth to hym in a
maner of his orayſõ, I pray ỹ that it pleas
the to double me the great blances that I
haue in my purse, and I shall gyue the .6.
and so was it done. Thã came he te sayntt
Paule & sayde to hym, please it the to dou
ble me ỹ great blances that I haue in my
purse and I shall gyue the .6. & so was it
done. Then came he to sayntt Francoys &
sayde, yf it wold please to double me the
great

great blances that I haue in my purse I shall gyue the, and so was it done, and nothynge had he remaynyng. I demaūd howe many greate blances had he in his purse. Answe. He had 5 and ¼ fourth. And for to know it double them and they ben 10 and an halfe, and then ye must gyue 6 to sayne Peter, and there remayneth 4 & an halfe, double them & they ben 9. And then gyueth he 6 to sayne Paule, & then there remayneth 3 double them and there ben 6 and that 6 gyueth he to sayne Francoys, and so he hat nothynge remaynynge.

¶ Here folowe dyuers other proper rules and questyons.

A Lorde hyreth a seruaunt the whiche he sholde gyue euery yere 10 nobles and a gowne, and the same seruaunt dwelleth 7 monethes with hym, and then they vary in so much that his lorde gaue hym lycence to go his way. And sayth, go thy wayes out of my house and take thy gowne with the, and then I am nothyng in thy dette. Now I demaund what was the gowne worth, wyll ye know that, then

marke

marke how many monethes 7 is lesse than a yere, that is 5 monethes lesse. And had ȳ seruaūt taryed so long yet by his mayster than shold he haue had the gowne & 10 nobles. Therfore saye thus 5 monethes gyueth 10 nobles, what giueth 7. Make it after ȳ rule of thre/ & it cometh 14 nobles.

¶ Of thre felowes or yongemen.

¶ Thre felowes play togyther ȳ one to wynne the others money. For the one had more money than the other. And the fyrst casteth, ȳ the one of them three leseth iust so mych money as ȳ other two hadde. Than casteth the second and leseth also as mych as the other two hadde. Then casteth the thyrde and leseth also iust as mych as the other two had. And than was the money iust deuyded, & had eche lyke moch. Now I demaunde how moche had eche or they began to playe, & how moche money that eche had whan they played. Wyl ye know that, then marke how many persons dyde playe, & adde 1 to them, as here adde 1 to 3 maketh 4. So many nobles had ȳ fyrst. Now double 4 cometh 8, & subtract 1 from 8

rest

rest 6: so many nobles had ẏ seconde. Thē double 7 cometh 14, therof subtra 3 reste 11, so many nobles had the thyrd.

An other question.

A Man byeth 46 pounde of saffron for 30 pounde, what shall cost 63 poūdes of saffron. wyll ye knowe that, then multyply the 30 poundes with the 63 poundes of saffron, cometh 1890. Now deuyde them with 46 cometh 41 poundes and $\frac{4}{49}$ parte of a pounde to paye for the 63 poundes of saffrou. Now wyll ye knowe howe many shyllynges that $\frac{4}{46}$ parte of a li. is. than multyply 4 by 20, for 20 sz maketh a li. cometh 80 sz. deuyde them with 46 cometh 1 sz, and $\frac{34}{64}$ part of a sz. Now wyll ye knowe how many pens that $\frac{34}{64}$ parte of a shyllynge is, thē multiply 34 with 12 12 pens maketh a sz, cometh 408. Dyuyde them wyth 46 cometh 8 pens and $\frac{40}{46}$ part of a peny. Now wyl ye knowe how many farthynges that $\frac{40}{46}$ parte of a peny is, then multypplye 40 with 4, for 4 farthynges

ges maketh a peny, comet 184 farthyn-
ges. Now deuyde them with 49, cometh
farthynges and $\frac{22}{46}$ parte of a farthynge.
Thus done ye shall kynde that 61 li. of, sak
tron coste 41 li. 1 sh. 2 farthynges and $\frac{22}{46}$
parte of a farthynge.

Item a 165 poundes of alome coste 2
poundes 5 shyllynges 6 pens 9 farthyn-
ges: what shal coste 22 poundes of alome.
If ye wyll soyle this question, than make
of your poundes shyllynges & adde ther-
to the odde 5 shyllynges: commeth 45 sh.
Then make of the 45 sh. penes, and adde
6 pens, commeth 546 pens, than make
of your pens farthynges, and adde ther-
to the 9 odde farthynges, cometh 2193 far-
thynges. Now multyply the farthynges
with 22 cometh 48246 farthinges. Now de
uyde them with 165 cometh 597 and $\frac{141}{165}$ part
of a farthynge, for so many farthynges
shall coste 22 li. of alome. Nowe wyll ye
knowe how many pens that the forewry-
ten farthynges make, then dyuyde them
with

with 4, for 4 karthyages make a peny. Then wyll ye knowe how many shyllynges that they make, then deuide the pens w̄ 12, for 12 pens maketh a sh. Thus done ye shall fynde that 22 pound of aloine cost 6 sh. 3. d. 2 karthyng, and it is done.

¶ An other questyon.

¶ A marchaunt hath bought a bagge of peper, I saye not how heuy, but whan he gyueth for a pound of peper 12 pens, then remayneth hym yet 37 d. And when that he gyueth for a pounde of peper 15 pens, then he lacketh 44 pens to paye for the peper. Now I demaūd how heuy the bagge of peper was, and how moch money that the marchaunt had. For to know this & suche other lyke questyon, ye shall take and subtract 12 from 15 and there resteth 3, whiche shalbe your deuysor. Then shall ye adde 44 and 37 togyther/ and that maketh 81. Then muste ye denyde 81 with 3, & therof cometh 27, so many pounde wayeth the bagge of peper. Now wyll ye knowe how moche money the marchaunt hadde,

then

then must ye multiplye 12 with 27. and adde 37 therto, or multyply 15 with 27 and subtra 44, cometh 361, so manypens hadde the marchaunt.

An other questyon.

A Dronkart drynketh a barell of bere in the space of 14 days, and when his wyfe drinketh wt him than they drincke it out within 10 daies. Now I demaunde in what space that his wyfe shold drincke that barell of bere alone. For to soyle this questyon & suche other lyke, ye shall fyrst subtra the leest drynker from ye more that is 10 from 14 and ther remayneth 4, & that is your deuisor. Now saye 4 gyueth 10 what gyueth 14 Make it after the golden rule, and ye shall fynde that she shold drynke it in 35 dayes.

Here endeth the introduction of awgrym for the pen.

Here begynneth the introduccion for to lerne to reken with the counters, with diuers rules belongynge to the same.

FOr as moch as there ben many persones that ben vnlerned, and can not wryte, yet neuertheles the craffte or scyence of awgrym and tekenynge is nedefull for them to know, wherfore I shal hereafter declare & wryte of this science in the best & shortest wyse that may be possible, how that ye shal order your selfe in

rekenynge and to caste counter.

¶ Fyrste ye shall vnderstand that in the crafte of awgrym be 9 letters or fygures that men may laye and wryte all maner of sommes withall. Therfore fyrst of all a man muste knowe in this crafte or scyence for to laye 9 counters in the places of that 9 syfers, for they must laye euermore styll for a remembraunce, so that ye maye remember your place by theym. And ye muste laye them the one ryghte aboue the other, that is to saye, in ye fyrst place euery counter standeth for one, and the nethermoste counter is the fyrste place, in the seconde place euery counter standeth for 10 In the thyrde place for a 100. In ye fourth place for a thousande. In the fyfte place for 10 thousande. In the syxte place for 100 thousande. In the seuenth place for a myllyon. In the eyghte place for 10 myllyons. In the nynth place for a hondreth myllyons. In the tenth place for a thousande myllyons, and so forth infinitely. And note well that euery counter that is layde betwen the lygnes, betokeneth euermore

uermore 5 tymes more thenne the counter that lyeth in the place nexte vnde hym/ that is to saye the fyrste counter lyenge alone aboue the fyrste place betokeneth 5 the counter lyenge alone betwene the seconde and the thyrd lyer and place, standeth fore 50, aboue the thyrde place 5 honderth, aboue the fourth 5 thousand aboue the fyfte place 50 thousande, aboue the syxt place 500 thousande, aboue the seueth 5 myllyons, aboue the eyght 50 myllyons, aboue the 9 place 500 myllyons, aboue the tenth place fyue thousand myllyons. But yf ye wyll the more surer know your places it is necessary for you to marke euery place with a marke, as to lay a counter or some other thyng which shal euer lay styl and in no wyse be remeued/but ye muste take hede yf ye laye coūters for the marke of your places, that ye laye them not to nygh the counter that ye must worke with all, lest that ye take the one for the other, but lay them as ye se them marked in the ensamples folowyng. And whan ye haue layd markes and know the order of your

places

places, ye may adde, and subtra, multyply and deuyde what nombers ye lyst, that is to say, to cast and to abate at your pleasure.

¶ Item whan there lye 2 counters betwene two lyers, take hym vp and laye 1 besyde the nexte lyer aboue them. And when there lye 5 counters besyde any lyer take them vp and laye 1 in the next space aboue them.

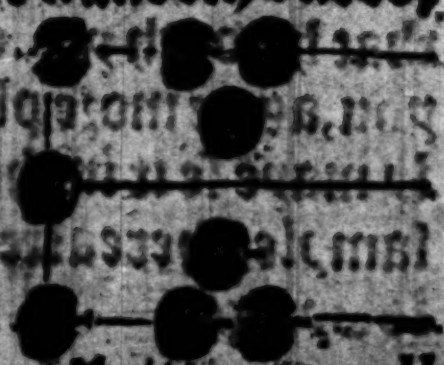
¶ Of addycyon.

Addycyon is none other thyng but to set togyther 2 or 3 nombers and to make of them a totall somme, as in the ensample folowynge.

¶ There is a man whyche owyth 20 li. 38 pounde, 100 pounde, 50 pounde, and 60 pounde. Now yf ye wyll knowe howe mych ye al these sommes maketh togyther Then for the first somme ye must lay two countres besyde the seconnde lyer, for the two stande for 20 / that is for the fyrste somme. Now for the seconde somme laye 2 counter besyde the seconde lyer, for that

is

is 10 / and lay 1 counter betwyxt the ne-
thermost & the seconde lyer, for that stan-
deth for 5 / and then lay 3 counters be-
syde the nethermost lyer / and they all to-
gether make 18. Now for the thyrde som
ye shall laye 1 counter besyde the thyrde
lyer / for that is an 100. For the fourthe
somme laye 1 counter besyde the thyrde
and the seconde lyer, that is 50. Now for
the fyfte somme lay 1 counter betwyxte
the thyrde and the seconde, and 1 besyde
the seconde lyer, and 1 bewene ye seconde
and the nedermost, and 4 besyde the ne-
thermost lyer, and that maketh togyther
69 / and in so doynge ye shall fynde that
all the forewryten sommes make togyther
247 as ye shall se in the fygure folowyng.
And euermore for a generall rule remem-
bre your places, for euery counter that
lyeth besyde the fyrst lyer standeth but for
1, in the second place
euery counter stan-
deth for 10, in ye thyr
de place for 100 as
is afore rehersed.



¶ Wyll ye proue whither ye haue added well or not, than subtra all your semmes one after an other. And in lyke wise as ye do with this ensample so ye shall do with all other of addicion.

Of subtraction.

Subtractiō is, if ye wyll withdrawe any summe from an other summe, ye must knowe two numbers, that is to wytte, the nomber that ye wyl withdrawe, and the nomber where fro ye wyll withdrawe. An eusāple. There is a man that oweth you 9756 poundes, and there vppon he hath payed you 5989 poundes, Now yf ye wyl knowe what there resteth then set downe your sūme that he oughte you, & therof withdrawe the sūme that he hath payed you, and that ye remayueth is the som that he doth yet owe you, as ye more playnly maye se it in the eusamples hereafter folowyage.

And when ye haue set your deth / ẏ is to say 9758 pouūdes vnder this maner as a fore shewed. Then yf ye wyll knowe the rest, thē take therof that ye haue payed as 5989 poūdes. Now for to do this / ye shall fyrst take vp the coūter that lieth betwene the fourth & fyft lyer for that is 5000. Thē take vp one of the coūters which lyeth be syde the fourth lyer, & that is a thousād / & ye shold take away but 900, therfore ye must lay downe 1 coūter agayne besyde ẏ thyrde lyer, that is a hōdreth. Thē take vp one of the counters that lyeth besyde the thyrde lyer, whyche is a hondreth / and ye sholde take vp but 80, therfore ye muste laye 2 counters besyde the seconde lyer / that is 20 and 80, that ye haue take vp maketh 100, then take vp one of the counters that lyeth besyde the seconde lyer / ẏ is 10 / and ye sholde haue take awaye but 9, therfore ye must laye one counter besyde the nethermost lyer, that is 1 and the 9 that ye haue subtrahed or take vp, maketh 10, and there remayneth 1767 pounde det, and stande thus.

wyll ye proue whyther ye haue subtrahed well or not, then adde therto that ye haue payed, and yf the somme come then so great as it was afore, then is your subtraction true, els not.

Multiplication.

Multiplycation is nothynge ē les but to multiplye one nomber by another, as thus, to know what is 6 tymes 9 or 6 tymes 12 and suche lyke. And in multiplycation ye must consyder two nombers, that is to wyt, the nomber that ye wyll multyply, and the nomber wherdy ye wyll multiply, and ye muste worke in multiplycatyon after this matier: Fyrste ye shall laye downe the lesser nomber, which is 6, and this 6 is the nōber that shall be multyplyed, and the 9 is the nomber that ye shall mutiply withall And ye shall laye the nomber that shal be multiplied, at the right syde of your lyers & when ye worke your multiplycation, ye

shall

shall laye them at the lyfte syde, as in this ensample here after folowyng shall more playnely appere.

¶ Fyrst ye muste laye downe the lesser nomber, whych is 5, as i this ensample as ye se them layde here on the ryght hande of the lyers. And when that ye haue thus done, ye muste take vp one counter and laye 9 for it on the other syde of the markes, that is to wyt / at the lyfte syde. And after that take vp another counter / and laye also 9 for it / and so forthe for euery counter that ye take vp ye must laye 9 for it at the other syde. And when that ye haue so wrought your worke, it wyll come iuste to 16, as ye se the counters before layde on the lyfte hande of the lygnes.

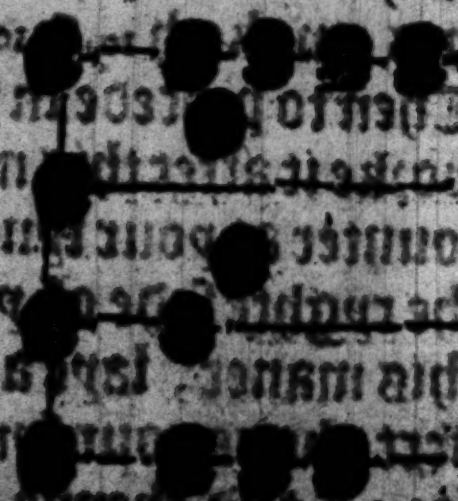
¶ And yf ye wyll multiplyle by greater numbers as thus / to know what is 14 tymes 14. Fyrste laye 14 on the ryghte hand of your lyers or markers, as this ensample folowynge sheweth.

And

place nexte aboue your fynger/and reken euerychone of them for 2 whiche maketh iuste 6, then 10 and 6 maketh 16/ as the fygure before shewed/ when ye haue so done, then take away your fynger, and for euery one of the 3 counters that lyeth in the fyrste place on the ryght syde lay 16 on the lyft syde/and then take them of the ryghte syde away/ and ye shall se that the nomber shall iuste come to 128, as the ensample before shewed. And thys wyse ye muste reken all counters that lyeth in the spaces yf the multiplycacyon shalde truely made.

¶ An other ensample

¶ For to knowe howe many grotesbe in 456 nobles. Fyrst ye shall set downe the lesse nomber, that is the nomber that ye shall multiplye, as this fygure folowynge playnely here sheweth,



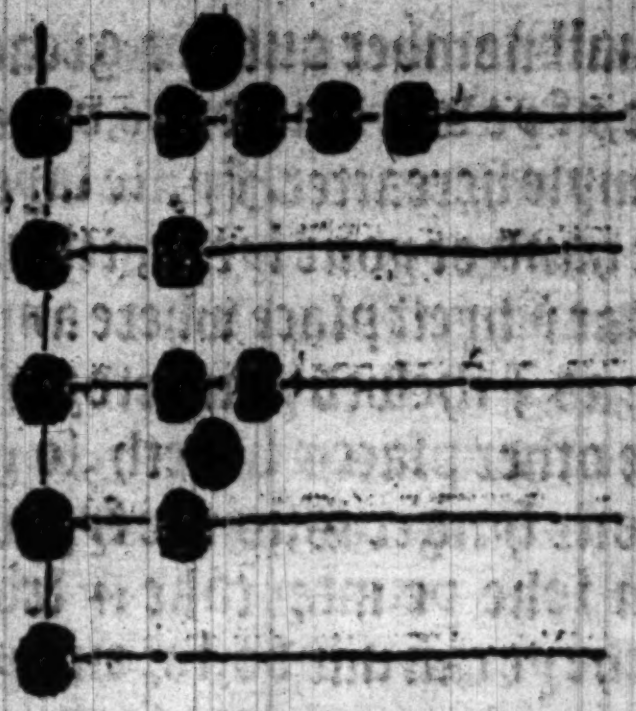
Nowe

¶ Now for to make of these nobles grotes, ye muste multyplye them with .20. for .20. grotes maketh a noble. Nowe for to multiply this nomber/ euermore ye muste set downe the nomber that ye wyll multyplye at the ryght syde at your markes and set youre fynger agaynste the marke that ye begynne at, for your fynger shall be a remembraunce to you for that place where youre fynger standeth is the fyrste place and damneth all the places vnder neth hym.

¶ Now for to make grotes of these 4563 nobles. Fyrste ye shall set your fynger agaynst the fourth lyer, & take vp one of the foure counters that lyeth agaynste the sayd fourth lyer, & lay two counters besyde the nexte lyer aboue that, where your fynger standeth, for that is the seconde place frome youre fynger, and the two counters so layde standeth for .20. that is one noble, and lyke as ye haue done with this one counter, so shall ye do wyth the other folowynge. Then take vp the counter that lyeth betwene the thyrd and

the

the fourth lyer and laye two counters in the next space aboue that, and that is also 20 or elles ye may take it vp and laye one counter beside the seconde lyer, for the place where your fynger standeth and that is also 20. Then take vp the counter that lyeth betwyxt the seconde and the thyrde lyer, and laye 2 in the nexte space aboue that/then take vp the counter that lyeth beside the secoud lyer, and lay two counters beside the next lyer abone that same. Then set your fynger agaynst the fyrste lyer, and take vp one of the 5 counters and laye 2 counters for it beside the nexte lyer aboue that, & as ye haue done with that, so must ye do with the other two, and then ye shall fynde that 456 nobles maketh 91290 grotes, and standeth thus as the ensample hereafter sheweth. And as ye haue done with these forewyten ensample of multyplication, so shal ye do with all other of multiplycacyon.

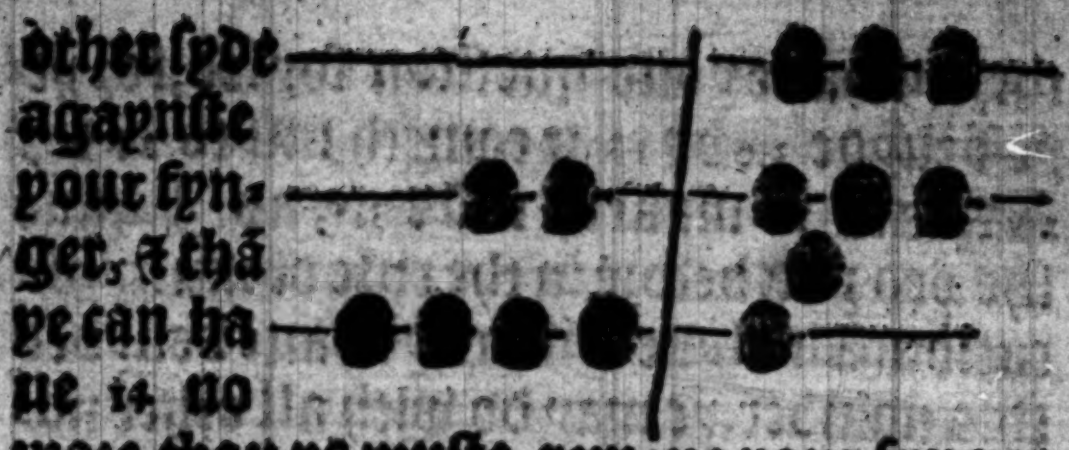


¶ Wyll ye know or proue whither ye haue multyplied well or not, then deuide the grotes, that is 91260 by 20, & yf the somme come to stand as it was afore, then ye haue multyplyed well. And thus alwaye ye maye make your proue vpou all maner of multyplycatours.

Of dyuysyon.

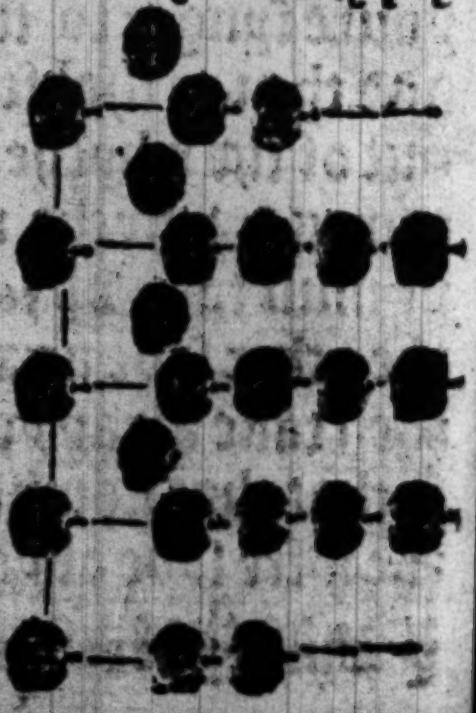
Dyuysyon is to deuyde a somme thorough an other somme: and in this dyuysyon must beknowen two nombers, that is the nober that ye wyll deuyde, and the nober wherby ye wyll deuyde it, as to know how many tymes ye maye

maye haue a small nomber out of a great
as by ensample, yf ye wyl deuyde 336 by 14
as in this ensample hereafter. Fyrste laye
336 on the ryght hand of your lyers, & then
set your fynger at ỹ hyest place where any
counter lyeth, for as I shewed you before, ỹ
damneth all the other places beneth, so ỹ
then there as your fynger is, is the fyrste
place. And then loke ye may take 14 frō
that place, whiche ye can not do, for euery
counter stādeth but for one, bycause your
fynger is there, therfore ye must remoue
your fynger to the nexte place beneethe
where the other 3 counters lye/ and then
loke yf ye maye take 14 from that place
whyche ye maye do ryght well / for these
3 counters at youre fynger standeth but
for 3, and the other 3 counters aboue
standeth for 30, and then se howe many
tymes 14 ye may haue out of 33, and so
many counters ye must laye on the other
syde iust agaynste your fynger/ that is to
saye, ye maye haue 28 out of 33, that is two
tymes 14 out of 33 / and therefore ye must
take vp 28 and laye 2 counters on the
other



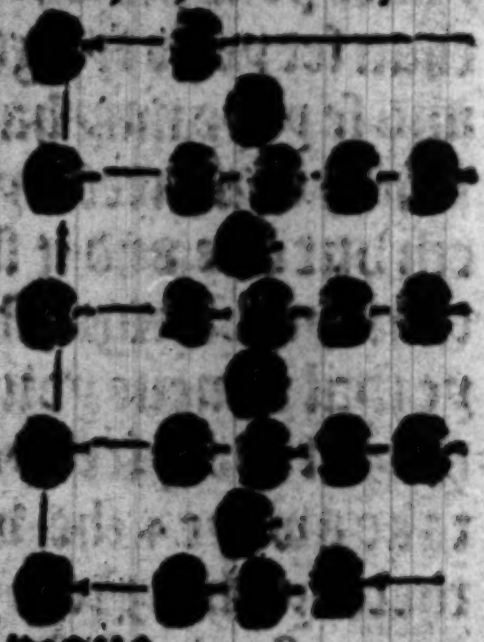
more, thau ye muste remeue your fynger to the next place beneth, & then reke̅ that place at your fynger to be the fyrst place, as ye dyd before: & then loke how many tymes ye maye haue 14 from that place, which ye can not, for that counter at your finger standeth but for 1, & the other in ỹ space aboue standeth but for 10 whiche is in all but 11, therfore ye muste remeue youre fynger to the nexte place beneth/ and then ye shal se that that nomber is 56 out of the whyche ye may well take out 4 tymes 14 whyche maketh iuste 56 therfore ye must take vp 56 and lay 4 counters on the other syde agaynste your fynger/and then take away your fynger, and ye shall se that that nomber that ye haue laydeon the lyfte syde of your markes cometh iust to 24 as the ensample before shewed, and

then ye haue your queſtion ſoyled, for yf ye deuyde 336 by 14 it cometh iuſt to 24 for 24 tymes 14 maketh iuſte 336, as I haue ſhewed you before in the rule of multyplycation. And lykewyſe as ye haue deuyded this nomber, ye may do with all other nõbers. And yf ye wyll proue whither ye haue well deuyded or not, take the nomber that cometh of your diuiſyon, and multyplye it with the ſmal nomber that is your deuyſor, and adde that remayneth therto yf there be any, and than it wyll come iuſt to the great nomber that was the nomber to be deuided. And lykewyſe yf ye wyll proue whyther ye haue truely multyplyed or no, take ỹ great nomber that cometh of your multiplycatiõ, and deuyde hym by the nomber that is to be multyplyed, and it wyl come iuſt to the thyrde nomber that was your multyplyer,



Yf ye desyre to knowe how many gro-
tes ben in 7999 pens. Fyrst ye shall set
downe your pens as ye se in this fygure
afore, and ye shall deuyde them with 4
for 4 ℔ maketh a grote. Now to the opera
cyon therof, whan that ye haue set downe
youre pens, as the fygure afore shewed/
than set your fynger at the hyest counter.
and se yf ye may haue 4 from that place/
which of a suretie ye can not, for there ly-
eth but one, and it standeth but for one, by
cause your fynger standeth there therfore
ye shal remeue your fynger and sette it a-
gayust the fyfte lyer, and se yf ye maye
take awaye 4 the whiche ye may do, for
there lyeth 7. Now your fynger standeth
agaynste the fyfte lyer, therfore ye shall
take vp the counter that lyeth in the next
space aboue your fynger, for that counter
is 5, and ye sholde take vp but 4 therfore
ye shall take it vp and lye it beside the
fyfte lyer of the tyght syde, and lay 1 on
the lyft syde also beside the fyfte lyer, then
se yf ye can haue 4 any more from þ place
ȳ which ye can not, therfore remeue your

finger and set it against ỹ fourth lier, and then se how many tymes 4, ye maye haue out of 39 ye may haue 9 tymes 4, and for this 9 tymes 4 ye shall lay 1 counter in the space betwene the fourth and sykte lyers, and 4 beside the fourth lyer, & that make 9 And as ye haue done with these so shall ye do with all other folowyng, & whan ye haue fynished your worke ye shal fynde ỹ 79992 pens make 19998 grotes as ye may se playnly here in this fygure.



¶ The proue.

¶ If ye wyl proue whyther ye haue deuyded well or not, then multyply the grotes with 4, for 4 pens maketh a grote, and yf the some come to stande as it dyde afore then ye haue deuyded well.

¶ Itē when ye deuyde ony somme with 6. yf there remayneth any thing it is pens And yf ye deuyde by shyllynges, yf there

remay-

remayneth any thynge it is shyllynges. And as ye haue done with these forewryten examples so maye ye do with al other.

¶ The golden rule.

¶ Regula aurea is called ẏ golden rule for lyke as golde passeth all other metall so this rule passeth all other rules in awgrym. And to the operacyon of this rule muste alwayes be noted thre thynges or thre nombers, of the whiche two of them must be lyke of names and of kynde, that is to wytte, the fyrste and the thyrde nomber, & alwayes ye shall multyply the second nomber with the thyrde, & that that cometh of the multiplycation is the nomber to be to deuyded by the fyrst nomber that is general dyuysor/ and the quocient of the dyuysor, sheweth a nomber of solucyon of name and kynde of the mydle nōbers, as in these ensamples folowynge shall appere.

¶ If a man byeth 40 egges for 20 pens how manyfor 12 pens, yf ye wyll soyle this question, ye must mutyplye the seconde and the thyrde nomber togyther / and

the

the producte or the somme that commeth of that multyplycation, ye shall dyuyde by ẏ fyrste nomber, lyke as here is shewed in this ensample, when ye bye 40 egges for 20 pens. what shal one pay for 12 egges ye shall multyply 20 with 12, commeth 240, the whiche ye shal deuyde with 40 cometh 6 pens, and so moche shall ye paye for the 12 egges. And thus ye maye do with al other suche questyons.

An other qustyon.

¶ Itē a 100 apples cost 12 pens, what shal one paye for 87, ye shall multyply 12, with 87, cometh 1044, the whiche ye shall deuide with a 100 cometh 10 pens $\frac{44}{100}$ parte of a d. for the 87 appels. wyll ye knowe how many farthynges that the 44 hondreth parte of a peny is worth, then multiplie 44 with as many farthynges as a peny is worth, that is 4 cometh 176 the whiche ye shall deuyde with 100 cometh 1 farthynge and $\frac{67}{100}$ parte of a farthinge.

Item 165 pounde of waxe cost 2 li. 5. sz. 6. d. 9 mytes. what shall coste 22 l. For to soyle this question and suche other lyker,

fyrst

fyrst ye muste make of peundes ℔, & adde therto the odde 5 ℔. the whiche standeth in this question, and the come togyther to 45 ℔. then make of the ℔. pens, and adde thereto the odde 6 pens that standeth in ỹ questyon cometh 546 d. than make of the pens mytes, and 24 mytes is a peny, and therto adde the odde 9 mytes, that standeth in the question commeth togyther to 13113 mytes, and that is the totall somme of all the li. ℔. d. & mytes togyther Nowe make it after the rule and say 165 pounde of wax coste 13113 mytes, what shall coste 22 pounde, fyrste multiplye the myddelmost and ỹ laste togyther, that is ye shalt multyplye the mytes with the last, that is with 22, and it shall come to 288486, deuyde them with 165 and it shal come to 1749 mytes and $\frac{6}{165}$ parte of a mytes, so many mytes shal the 22 pounde of wate coste. Now wyll ye knowe how many pens that the fore wyte mytes make: then deuyde them with 24, for 24 mytes maketh 1 peny Then wyll ye know how many ℔. that the pens make, then deuyde them with 12, for 12 d.

maketh a ℔. And thus doing ye shal fynd that the 22 li. of war shal cost 6 ℔. 20 mytes & $\frac{66}{165}$ patt of 1 myte and it is done.

¶ Item when ther standeth 1 in the fyrst place, As 1 goos cost 3 d. what shall cost 28. ye shal multyply the myddelsse with the last in sayeng 1 tymes 28 is 84 so many pēs cost 28 gese, and it is fynysshed.

¶ Item in the cōtrary as whan that 1 cometh in the latter ende, as here in this ensample 20 capons cost 23 pens/ what shall cost 1 capon. For to soyle this question ye shall deuide ỹ myddelmost with the first that is 23 with 20 cometh 1 d. and $\frac{3}{20}$ part of a peny, that is 9 mytes & $\frac{4}{5}$ part of 1 myte for 1 capon.

☞ Item 17 elles and $\frac{1}{2}$ cost 14 nobles and $\frac{1}{2}$ part of a noble, what shall cost 32 elles and $\frac{1}{2}$ part. For to soyle this questyō and such lyke/ fyrst ye must breke the first and last broken togyther crossewyse in sayeng 1 times 4 is 4, set the 4 by 17 elles Thē say 1 tymes 2 is 6/ set ỹ 6 by the 22 elles. Then multyplye bothe ỹ nombers of your fractyons

tyons togyther/in sayenge 4 tymes 3 is 12
the whiche ye shall set vnder 4 and 6/then
it standeth thus:as in the rule of thre/ yf
17 elles $\frac{4}{5}$ parte of an elle cost 14 nobles
$\frac{1}{3}$ part of a noble/what shal cost 32 elles
and $\frac{2}{3}$ part of an elle. Fyrst mulyply the
fyrste hole nomber with the nethermost of
his broken that is 17 with 3 cometh 136
therto ye shall adde 4 that standeth a-
boue 3 comeeth 140, the whiche ye shal mul
typly with the 3 that standeth vnder the se
conde broken cometh 420 that is your de
uysor, then multiply 14 with the 3 that stá-
deth vnder 1 andadde that 1 thertocometh
43 that is your multiplicatour, then mul
typly 32 with the nethermost figure of the
broken, that is with 3 and adde therto the
same 6 that standeth aboue the same 3 co-
meth 262. Now set it in the rule of thre in
sayenge 420 elles cost 43 nobles, what shal
cost 262, multiply the sccõd with the thyrd
and then deuyde that that cometh of that
multiplycation with the fyrste, and ye
shall fynde that the 32 elles of cloth cost 26

nobilles 16 d. 3. 4 mytes and $\frac{15^{c}}{420}$ parte of a myte.

¶ Item whan that there standeth at the beggynnyge a hole nomber with a broken and in the seconde and thyrde place no broken, as here. 3 6 elles and $\frac{1}{4}$ coste 8 li. what shall coste 16 elles. For to soyle this question, ye must multyply the fyrst hole nomber with the undermoste fygure of his broken, that is 3 6 with 2, and adde the 1 thereto that standeth aboueth 2 commynge 7, and that is youre deuysor, then multiplye 8 li. also with the undermoste fygure of the broken, that is to wyth with 2, and it cometh to 16, then multyplye 16 withe 16 cometh to 259 the whiche ye shal deuyde with 17, and it wyll shewe you that there shall be to paye for the forsayd clothe 3 pounde 10 shyllynges 1 peny 17 mytes, and $\frac{11}{17}$ parte of a myte.

¶ Item when ther standeth in the fyrste nor in the seconde no broken nomber, but in the latter ende a hole nomber with a broken, as here 4 ounces of grayne coste

14 s.

14 ℔. what for 9 ounces of grayne and one thyrde. For to knowe this ye shall multiplye the fyrst 14 with 3 that is your deuysor, then multiplye 9 with 3 and adde that 1 therto ỹ standeth aboue 3 cometh 28, then set it thus 42 gyueth 14 what gyueth 28, make it forth after the rule and ye shal fynde that there is to paye 9 shyllynges 4 pens for the 9 ounces of grayne and one thyrde parte.

¶ Item when that ye fynde neythere at the beginnynge nor at the latter ende no broken nomber, but in the myddes a hole with a broken as here. A man bought 48 shepe for 64 crones and — what shall 4 coste 48 shepe, For to soyle this questyon ye muste multyplye 48 with 4 cometh 192 that is your deuysor, then multyplye 64 with 4, and adde therto the 3 that standeth aboue 4, cometh 259, the whiche ye shall multyplye with 13 cometh 4944 the which ye shall dyuynde with 192. And thus ye shal fynde that ye muste paye for the 16 shepe 24 crones 4 stuuers 7 36 mytes

¶ Item

¶ Item when ye fynde no broken at the begynnynge but in the seconde and thyrd one hole with a broken . As 7 elles for 6 pounde $\frac{1}{4}$ what shall cost 16 elles ℔ $\frac{1}{4}$ For to soyle this question ye must multyplye the two vndermost broken nombers togyther, in sayenge 3 tymes 4 is 12, the whiche ye shall multiplye with 7 cometh 84 that is the dyuysor. Thē multyply eche with his broken cometh 25 and 46 ỹ which ye shall multiplye one with the other, cometh 1152, the whiche ye shall deuyde with 84, and the solucyon shalbe to paye 14 li 12 sh. 18 ỹ:

¶ when that ye fynde at the begynnynge and the myddes a hole with a broken, and at the latter end standyng a hole without a broken as 9 elles ℔ $\frac{1}{4}$ for 5 pounde $\frac{5}{8}$ what shall cost 15 elles multiplye 9 with 4 and adde therto 3 cometh 39, the whyche ye shall multiplye with 8 cometh 312, that is your deuysor then multyply 5 with 8 and adde therto the 5 that standeth aboue 8 cometh 45 the which ye shall multyply with 4 that

4 that standeth vnder ẏ fyrste broken, co
meth 180. Now set it in the rule of thre in
sayeng 312 gyues 180 what gyueth 15, make
it after the rule and it cometh 8 li. 13 sz. 22
mites and $\frac{10}{50}$ of a myte.

☞ The rule of company.

¶ There be 3 marchauntes or compa-
nyons the whiche laye togyther theyr mo
ney in marchaundyse, and eche to wynne
after his inlayenge, wherof he fyrst layd
in 170 crones. The seconde 60 crones The
thyrde 40 crones and therwith they haue
wonne 50 crones besyde al vncost Now I
demaunde howe moche that eche shall
haue after his inlayeng. Now for to soyle
this question and all suche other rules
of company, ye muste make of theyr mo-
ney that they haue layd in a totall somme
cometh 250 / now saye 250 gyueth 50 what
gyueth 150 make it after the rule of ther
and it cometh to the fyrste man 30 crones
wynnynge. Nowe for knowe what the
seconde hath wonne, ye shall saye 250
gyueth 50 what gyueth 60 make it after
the

the rule, and ye shall fynde that the secō-de hath wonne 12 crownes, wyll ye knowe what the thyrde hath, then saye 50 gyueth 50 what gyueth 40 make it after the rule, and ye shall fynde that the thyrde hath wonne 8 crownes. And thus shal ye do with all other rules of company.

The rule of company with tyme.

¶ Thre felowes doth marchaundyse to-gyther, wherof the fyrst layeth in 500 crownes for 4 monethes. The seconde 800 crownes for 2 monethes. The thyrde 1000 crownes for 5 monethes, & withall this mony they haue wonne 600 crownes besyde all vn-cost payde. Now I demaunde what eche hath wonne with his money, for to know this ye muste mulyplye eche maunes money with his tyme, that is for the fyrste 500 with 4 cometh 2000, set the as thoughe he hath layde in so muche, for the seconde multyply 800 with 2 cometh 1600 set it also as though he had layde in to moche, for the thyrde multyplye 1000 with 5 cometh 5000, set that also as though

he

he had layde in so moche. Nowe adde the .ij. nombers togyther and then make it after the rule of companye and then shal ye fynde what eche hath wonne with his money.

The rule of baterynge.

¶ Two marchaunte men wyll chaunge theyr wares togyther and the one hath a fyne blake clothe the whiche is .vi. elles longe, and he wyll gyue the elle no lesse than .xs. peus. The other marchaunt hath pepet, and he wyll sell the pound no lesse than .vs. d. Now I demaunde howe many pound of peper the fyrst marchaunt shall haue for his .vi. elles of clothe. For to soyle this question ye shall say .xi. gyueth .vi. what gyueth .xs. make it after the rule of .iij. and ye shall fynde that the fyrste shall haue for his clothe .v. pounde of peper .x. ounces .xi. engelsche and $\frac{4}{11}$ parte of an englysche

Of a watte.

¶ A wat ronneth in the fylde and ouerronneth in one mynute/ there be .60. in an houre/ .xii. roddes of grounde. And a gra-

hounde

hounde beynge her enemye/ foloweth her and ouerronneth in one mynute 15 roddes of grounde. But or the grahonde began to ronne the hare had ronne 200 roddes of londe. Now is to be demaunded in howe many minutes and how many roddes of londe was the hare taken. For to soyle this question and suche lyke, ye shal subtra the lesse ronnynge out of the more that is 12 out of 15, and there remayneth 3 and therwith ye shall deuyde the space that the hare hath ronne afore or the grahounde began to ronne/ that is 200 roddes, And in so doynge ye shall fynde that the grahounde ouertoke the hare in the 66 mynutes and $\frac{2}{3}$ partes of a mynute that is one houre and 6 mynues and $\frac{2}{3}$ of a mynute, wyll ye knowe how many roddes that the grahonde dyd ronne or that he toke the hare/ then inultiply 66 and $\frac{2}{3}$ with 15 cometh $\frac{3000}{3}$ the whyche ye shal deuyde with 3 cometh 1000 hole so many roddes dyd the hounde ronne or that he toke the hare.

¶ The

¶ The rule of two felowes.

¶ Two felowes went togyther out of a towne, and the one goeth euery daye 12 myle, and the other goethe the fyrste daye but 1 myle, and the seconde daye 2 myles the thyrde daye 3 myles/ and so forth euere daye one myle more. Now I demaund in howe many days/ and how many myle went he or that he ouertoke his felowe. For to soyle this questyon, ye shal double the myles of hym that wente euery daye lyke moche, that is 12 and 2 tymes 12 is 24, therof ye shall subtra the one myle that the other goeth the fyrste day, and there resteth 23, vpon the same daye was the fyrste man ouertaken of his companyon: wyll ye knowe in howe many myle, then multiply 23 with 12 cometh 276 for so many myles went he or he ouertoke hym.

☞ A man hath a golden crowns of 34 stuuers, and a phylyppus gulden of 15 stuuers, and a ducate of 22 stuuers, and wieh this money he goeth to the chaunger and wyll haue for it negenmannekens cro wnes of 9 mites, & of 3 mytes and of 2 mites

and halfe mytes. Now I demaunde how moche that he shall receyue of eche for the forsayde golde and receyue of eche lyke moche. For to soyle this question and such lyke then make of all the greate money that he wyl chaunge mytes, for that is the leste coyne that he wyll haue/and cometh for mytes, then loke howe many mytes that al the smal pens be worth that he wyl haue, that is 25. Nowe deuyde the greate somme of the mytes, that is to witte, for with 25 and ye shall fynde that he muste haue of eche 36 and $\frac{2}{25}$ and it is done,

¶ Of four carpenters.

¶ Foure carpentes wyll make a house wherof the fyrst taketh vppō him to make it him selfe alone in a yere. The seconde wyll make it in two yeres, The thyrd wyl make it in 3 yeres. And the fourth in 4 yeres/Nowe I demaunde yf all these 4 wrought vpon that howse in what space wolde they 4 make that howse. wyll ye know that, then say the fyrst wolde make it in one yere that were 12 tymes in 12 yere The seconde in 2 yere, that were 6 tymes

in 12 yere. The thyrd in thre yere that were 4 tymes in 12 yere. And the fourth in foure yere ꝑ were thre tymes in 12 yere. Nowe somme them all together that is 12, 6, 4, 3, cometh 25, therwith deuyde 12 cometh $\frac{12}{25}$ prat of a yere Now yf ye wyll know how many dayes that it is, then multyplye 12 wthy 365 for so many dayes be in a yere/ & that that cometh of that multyplycacyon deuyde it by 25 cometh 175 dayes and $\frac{5}{25}$ parte of a daye.

¶ The rule of false posytyons, by the whiche all maner of difficult and harde questions maye easelye be dyssoluyd & fyrste of one false posytion.

NOw shal ye knowe how by false posytiõs or coniectures one or two ye shall fynde owt the very trewthe of that the which ye seake for, and fyrste ye shall vnderstande how to fynd the trewth of a question proposed by one coniecture or posytyon.

When

when that any queſtion is put furthe vnto you, too be aſſoylyd, of the whiche one part is knowyn and the other vnknowyn. Anſwere to that queſtion by and by, with youre ſelfe at all auenture, and then cõſyder w̃ your ſelf whether ye haue made ryghte anſwere or no, yf not, loke what proporcion is betwene your coniecture and that that folowyth of your coniecture and the ſame proporciõ is betwene the thing knowen and that ỹ partaynyth vnto ỹ ſelfe thyng beynge yet vnknowẽ. As by exaimple ye ſhal more playnly perceaue,

¶ A certayne wayfarynge man cõmyng by the way, founde ſo many crownes. that the ſeconde, the thyrde, & the fourth parte of them addyd togyther made 50, I demaunde what ſumme he founde. To make anſwere to this queſtion by one poſycyon, ymaggyne ſome ſumme that hath theſe partes in it, that is to ſay: a ſeconde a thyrde, and a fourth part, and be it 12, whoſe ſeconde part or halfe is 6, thyrds parte 4, the fourth parte 3, whiche all addyd

dyd togyther 64, make 78. but the ſum that he founde, the ſecond, thyrde, and the fourth of it made 50. wherfore it is not the ſom he founde, therfore this poſition is falſe/ & yet by this falſe ſhall ye come to the lyght of treweth, by the helpe of the rule of thre. For loke what proporcyon is betwene the ſeconde, the thyrde, and the fourthe part of 12 addyd togyther, the whiche maketh 13, and 12 whoſe partes therbe, the ſame proporcyon is betwene 50 whiche is the ſeconde, the thyrde, and the fourthe parte addyd togyther of the nomber vnknowen, & the ſame vnknowē nomber it ſelfe. Then ſaye thus with thy ſelfe: yf 13 whiche contayneth the forē-ſayd partes in them, come of 12 of whome come 50, then ſet them thus 13, 12, 50, then by the rule of thre multyplye 50 by 12, and therof commeth 600 dyuyde the ſame by the fyrſte nomber 13 and in the quotient thou ſhalt fynde 46 $\frac{2}{13}$ the whiche was ỹ ſumme of the corwnes the which the man founde: of the whiche ſumme the halfe part is 23 $\frac{1}{13}$ the thyrd part is 15 $\frac{1}{13}$ the fourth

fourth parte is $\frac{7}{12}$ the whiche partes addyd togyther make iuste 50. Thus thou seest how that by one false posicion or cõiecture with the helpe of the rule of thre, this question is soone dissoluyd.

¶ An other questyon.

¶ Fynde me a number in the which 5 is $\frac{2}{3}$ that is to say, two thyrd partes of hym Answer, ymagyne any number ye lyste that hath thyrdes in it, as be it 6, then loke what is the thyrde parte of 6, that is 2. then two of this thyrde partes of 6 makyth 4 wher fore this posicyon is false, yet by this false posytion with the helpe of the rule of thre, thou shalt fynde out ye trewth, after this maner. If 4 be the $\frac{2}{3}$ parte of 6 to whome is 5 $\frac{2}{3}$ partes serche by the rule of thre, thou shalt fynde it 7 $\frac{1}{2}$

¶ An other question.

¶ What number is that in the which after that the thyrde, the fourth, & the fyfte parte be deductyd out of it, there shall yet remayne 24? Answer. ymagen any nombre that hath a thyrde, a fourth, & a fyfte

in hym. As for example: say it is 60, then subtrahe out of hym his third, his fourth and his fyfte part: and thou shalt fynde remayne but 11. Lo how muche thou hast myssed thou shuldest haue fouvde suche a nomber, in the which after the forsayd partes were subtrahyd shuld remayne 24. and here remayneth but 11, yet proue by the rule of thre, and thou shalt fynde the trewe numbe. If 11 remayne after the substraccyō of the aforesayde partes is 60 what number is that out of the which after lyke substraccyō of his thyrde, fourth, & fyfth, parte shall remayne 24 proue by the rule & thou shalt fynde it 110 $\frac{}{1.}$ whole thyrde part is 36 $\frac{12}{15}$ the fourth 27 $\frac{10}{15}$ & fyfte 22 $\frac{2}{3}$ which all added together make 86 $\frac{30}{15}$ the which deductyd out of 110 $\frac{30}{15}$ shall remayne 24. These and dyuerse other questiōs before rehersyd by the same crafte one false posycyon maye sooue be assoyled. Now wyll I shewe you howe to dyssolue all maner of questions how dyfficulte so euer they be by two false posy-

cyons, for by one falle polycyon ye ſhall [illegible] anſwere to all maner of queſtions, but two falſe poſions, what euer queſtyon it be/it may ſoone haue ſolucyon.

How to anſwere by two falſe poſycyons.

INnumerable queſtyons do chaunce in numbzes, the whiche though they can not be dyſſoluyd by one poſycion oz coniecture yet ſhall it not nuyſſe but be aſſoyled by two poſicions: in the whiche maner ye muſt dilygẽtlye note howe farre aboue ꝑ trueth oz vnder bothe poſycyõs do fall: for by the obſeruacyon of .ii. cõiectures how nere they be to the treuthe, & the dyfference of the errozs whiche enſue of the poſycyons, the verite commeth to lyght which may be done .iii. wayes: one waye by the rule of bothe moze oz bothe leſſe. Anotherwaye by the rule of the one moze and the other leſſe

¶ when bothe poſycions be moze then the veryte oz bothe leſſe, then ſubduce the leſſe errour out of the moze errour, & that that remayneth ſhalbe the dtuyſoz: then

multyplye the fyrste errour by the seconde posycion, & the latter errour by the fyrste posycion, and then this .ii. numbers beynge multyplyed, deduct the lesse out of the more, and that that remayneth diuide it by the forsayde diuisor, and the quocient shall shewe the verite. Example

¶ Three marchaūtes diuided a 100 crownes so that the secōde shulde haue 3 crownes more then the fyrste, and the thyrde 4 mo thē the second: I demaunde now how many crownes eche of them receaued?

Answer. Fyrste make sayntе Androwes crosse, as ye se hereafter, then coniecture what ye lyst, as for exāple, Say the fyrst had 11, and then muste the seconde haue 15, and the thyrde marchaunt 40, whiche sum gathered togyther māketh 102 but ye had but 100 to dyuyde, wherfore ye haue mysse, and your posycio redoundyth to more then the very sum by 2, whiche came of your fyrste posycion 1 wherfore set the fyrst posycion 1 at the vpper ende of the crosse on the left syde of the cosse, and the errour which hath ensued of that

at the foote of the crosse on the same syde, as ye se in the example. And for bycause that this cõiecture came to more then the trueth, therfore set this letter M. in the space betwene the vpper ende of ỹ crosse and the nether. And for as muche as in this fyrste coniecture ye haue erred thus much, coniecte agayne and supose that the fyrste marchaunt had 11 then muste the seconde haue 14, the thyrde 18, all these collecte make 103, so that nowe ye haue erred agayne, your posycion beynge to much/ so that your errour is 3, and for because that this seconde posyciõ is more then the verye as the fyrste was, set the posyciõ 11 at the vpper ende of the crosse on the ryght syde, & the errour 3 the foote of the crosse on the same syde, & put this letter M. betwene the space to sygnyfey more. Bothe these posycion then be more then the verite, wherfore accordynge to the rule fyrst subduce the lesse errour 3 at the fote of the ryghte syde of the crosse from the greater errour at the foote of ỹ lefte syde of the same crosse, remayneth

to

to be ſet in the ſpace betwene both ẏ feete as ye ſe: which ſhalbe the dyuyſor. Then accordynge to ẏ rule, multiplye the fyrſt poſycyon whiche is 33 by the errour of ẏ ſeconde poſycyō which is 1, and therof co meth 99, theu the ſecōde poſiciō 31 by ẏ er rour 9 of the fyrſte poſycion, and therof cōmeth 279, then deducte the leſſe ſum 99 out of this more ſumme 279, remayneth 180, dyuyde this ſumme by the dyfference of the errours whiche is 6, and the quo cyent ſhalbe 30 whiche is the trewe poſy cyon: For the fyrſte man haupnge 30, the ſeconde muſt haue 33, and thyrde 37, whi che all ſet togyther, make iuſt 100. Thus wonderfull craftly by theſe .ii. falſe poſy cyons ẏ trewe & iuſt poſycyō is brought to lyght.

☞ The example.

99	180	279
33		31
36	30	29
40		31
9	6	1

¶ An example when bothe posy-cyons come to lesse then the veryte.

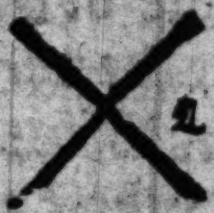
When bothe posycyons come to lesse then is the veryte, the whiche is all one matter with the other, as ye shall perceyue by the same example agayne. As suppose ye had coniected that the fyrst had receued 27, thē most the seconde receane 30, and the thyrde 34, whiche added togyther make 91 whiche is lesse by 9 then the sum 100, the which sholde be deuided amonge them. Set then this fyrste false posycion 27 at the vpper ende of the crosse on the lefte syde, and the errour ensuynge of that at the foote of the same crosse on the same syde. And for bycause ꝑ this posicyon come to lesse then the verite therfore sette this letter L. for lesse, in the space betwene the posicion and ꝑ errour, as ye se in the example folowinge. Then coniecte agayn and suppose that the fyrst marchaunte had receaued 29 then by that reckenynge the seconde sholde receaue 31 the thyrde 36, which all set togyther make

97, so that yet this posycion commeth not to the veryte 100, but lacketh 3 of it, wherfore set this posyciō 29 at the vppar ende of the crosse at the ryghte syde, and this errour 3 at the foote of the crosse, and in the space betwene the posycion and the errour set this letter L, for lesse. Nowe for so much as bothe these posicyons be lesse then the veryte, worke as ye dyd before, accordynge to the rule, subduce the lesse errour 3 out of the greater errour 9, remayneth 6 for the dyuisor to be set in the space betwene the two errours. Thē multiplye the fyrste posycion 27 by the second errour 2 cōmeth 81, then the seconde conlecture 29 by the fyrst errour 9 cōmeth 261 then deducte 81 out of 261 remayneth 180 whiche diuyded by 6 the diuysor afore sayde, the quotient shalbe 30 whiche is the iust and very conlecture, the whiche ye sholde haue conlected. Thus ye haue had sufficient example of this fyrst rule of bothe more, and both lesse.

There

¶ Here after folweth the exam-
ple of bothe lesse.

81	196	261
27		29
30		32
34		36
6	6	3



¶ Here foloweth the rule of one
moze, and the other lesse.

When the one polycyon amounterh to moze then the verye, and the other lesse then the verye, then adde the errours togyther and that addyd number shalbe the diuysoz. Then multyplye the fyrste polycyon by the seconde errour, and the seconde polyon by the fyrste errour, and that that cõmeth of bothe these multyplycatours adde them togyther also, then diuyde this addyd nũber by the addyd errours the dyuysoz afozesayd, & the quocyent sheweth the true polycion.

¶ The example,

¶ we wyll take the fyrste case agayne,

and

and ſuppoſe that the fyrſte marchaunte haue receaued 32 crownes, then muſt the ſeconde receaue 35, & the thyrde 39, whiche all addyd togyther make 106. wherfore that poſycion is falſe and to much by ſet the poſycion 32 at the vpper ende of the croſſe/and the errour 6 at the nether ende of the croſſe in the ſpace betwene, ye ſhall ſet this letter M, for more. And for bycaſe that this poſycion hath exceded the veryte, couiecte agayne leſſe, and ſuppoſe that the fyrſte hath receaued 29, then muſt the ſeconde receaue 33, the thyrde 36 all addyd togyther maketh 97, whiche is leſſe then the veryte by 3, wherfore ſet this falſe poſycion 29 at the vppar ende of the ryght ſyde of the croſſe, and the errour 3 at the nether foote of the croſſe, in ỹ ſpace betwene ſet this leter L, for leſſe. Of this two falſe poſicyons the one is more then the trueth the other is leſſe, wherfore accordynge to the rule adde both ỹ errours 6 and 3 togyther, that maketh 9 for the diuiſor: then multyplye the fyrſte poſyciõ 32 by the ſeconde errour 3, which maketh

36. and the seconde posycyon 13 by the fyrste errour 6, whiche maketh 174, and that that enmeth of bothe these multyplycations adde it togither, and it maketh 270 diuyde this addyd number by the addyd errours, whiche was 9, and the quocyent shalbe 30 whiche is the trewe posycyon as ye may proue.

¶ The example.

69	270	174
32	30	29
35		32
39	¶	36
6	9	3

BRITISH MUSEUM

Thus maye ye dissolue all other maner of questyons, whiche haue ben set before in this boke, without great payne or studye,

¶ Finis.

¶ Imprynted at London in Aldersgate Stete by Jhon Herford.

John Haroes